Must-Have Band Saw Blades

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Planter Box 16

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These two symbols let you know there's more information online at www.Woodsmith.com. There you'll see step-by-step videos, technique and project animation, bonus cutting diagrams, and a lot more.

Jewelry Chest page 30

editor's note

Sawdust

Sometimes, things work out better than you hope. Take the bookcase featured in this issue for example. From the start, we were looking for a simple design that would take a minimal amount of materials to build. Built from less than two sheets of plywood, this project fits the bill. But we ended up with much more than that. Sure, the bookcase looks great by itself and can hold a lot of stuff. One other benefit of this design is you can transform this classic bookcase into a whole wall full of storage by connecting several bookcases together, like you see on the cover.

Projects like this are just one of the reasons why I really enjoy being a woodworker and sharing the results with you.

HELP WANTED

Another reason I enjoy what I do so much is all the talented people I have the opportunity to work with every day. And, it just so happens, I'm looking for another talented person to join our editorial team. This is a full-time, staff position here in Des Moines, Iowa. So if you're an experienced writer, interested in woodworking, and would like to share your knowledge with other woodworkers, I want to hear from you.

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Terry

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from our readers

Tips & Techniques

Flip-Up Outfeed Extension Table

In my small basement shop, there just isn't enough room for a permanent outfeed table for my cabinet saw. I needed a table that I could set up and take down quickly, but was still strong and sturdy.

I found the solution while roaming around in my local home improvement center — the folding shelf brackets you see in the photo at left.

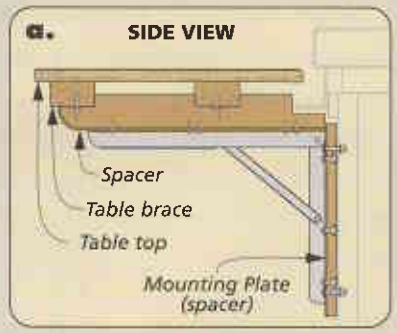
As the drawings below show, I attached the vertical arms of the brackets onto mounting plates so the table top would clear the saw's fence rail when it was in either the up or down positions. I did the same thing with the horizontal arms to raise the outfeed table level with my saw table. To keep the table flat and to add strength, I added braces underneath the outfeed top and then mounted the table perfectly level with the saw table. Finally, I cut grooves in the table to line up with the miter slots in my saw table.

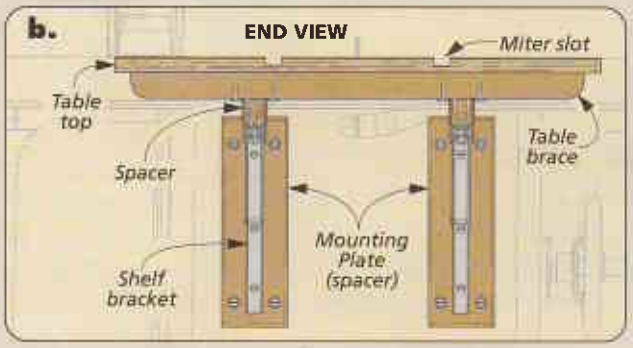
This outfeed extension table swings into action when it's needed and safely tucks out of the way when it's not.

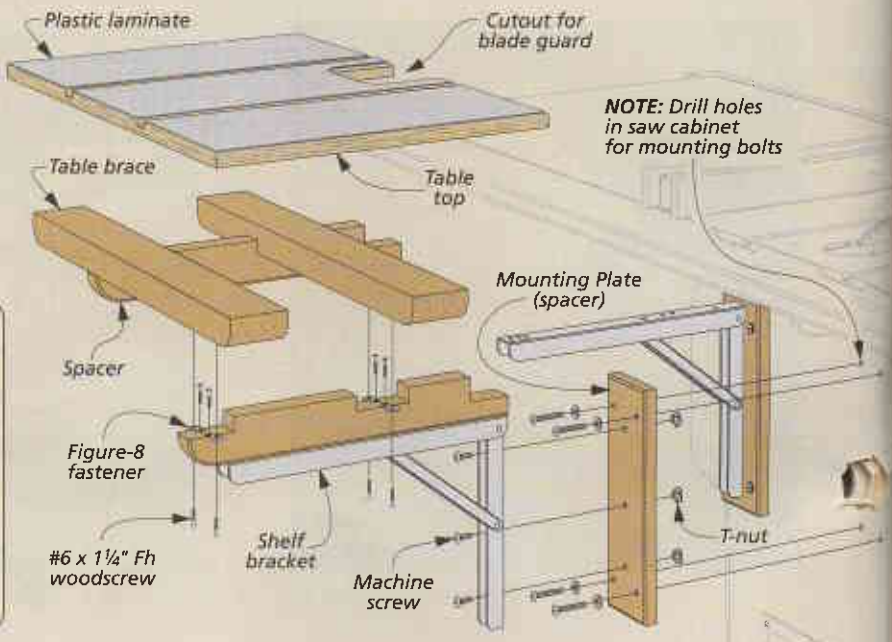
These shelf brackets lock in the up position and are released by pressing the levers inside the horizontal arms of the brackets.

It works very nicely, and now I have the outfeed table I've always wanted — one that's there when I need it and gone when I don't.

Malcolm Robb
Brantford, Ontario, Canada



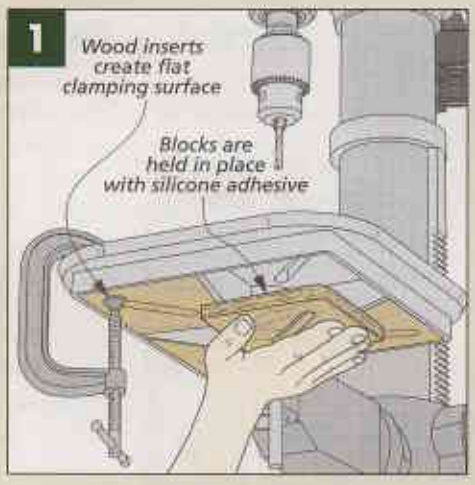




Drill Press Table Inserts

Clamping large parts to my drill press can be a challenge. The work table is cast iron and divided into ribbed sections on its underside. This design makes it difficult to clamp workpieces to the table securely. The clamps have a tendency to slip while I'm drilling, which can create a downright dangerous situation.

To solve this problem, I decided to fill the sections underneath the table with wood inserts (see Figure 1). I cut out the inserts to fit snugly between the ribs. Before mounting the inserts to the table, I also cut slots and clamping holes in the inserts to match those slots and holes in the work table. That way I can have full use of the table without having to remove the inserts. Flexible silicone adhesive holds the blocks in place.



Now, I can clamp large workpieces firmly, and I don't have to worry about the clamps slipping while I'm drilling. I've found this to be the most useful modification I've made to my drill press.

George Copland
Duncan, Oklahoma

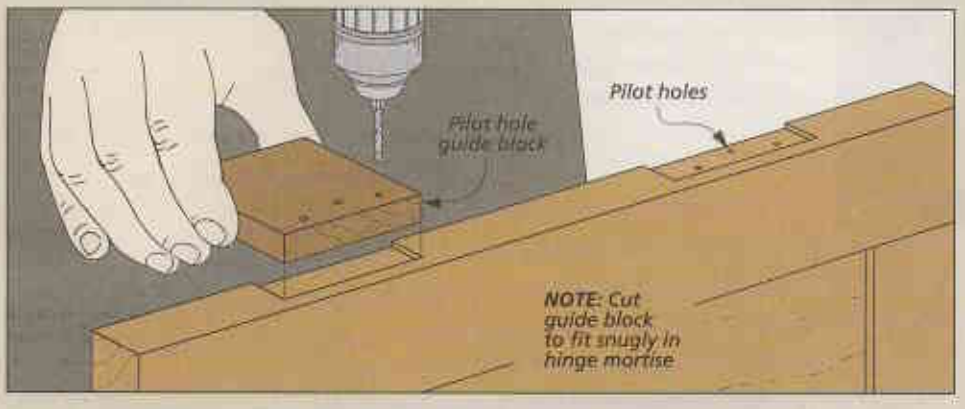
Butt Hinge Pilot Hole Guide

When installing a butt hinge in a mortise, I find it difficult to drill pilot holes for the mounting screws accurately. I either drill the holes a little off center, or they're not square to the workpiece. I came up with a way that allows me to drill the holes accurately and quickly as well.

First, I make a ½"-thick hardwood guide block the exact width of the hinge. Then I drill holes in the block that are the same diameter as the pilot holes for the hinge screws, and I make sure they line up with the hinge holes.

Now, all I have to do is put the block in the hinge mortise and drill pilot holes with the block guiding the bit.

Thomas Fitzgerald
West Seneca, New York



SUBMIT YOUR TIPS

If you have an original shop tip, we would like to hear from you and consider publishing your tip in one or more of our publications. Just write down your tip and mail it to: *Woodsmith,* Tips and Techniques, 2200 Grand Avenue, Des Moines, Iowa 50312. Please include your name, address, and daytime phone number in case we have any questions. If you would like, FAX it to us at 515-282-6741 or send us an email message at: woodsmith@woodsmith.com. We will pay up to $200 if we publish your tip.

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Mortising Machine Clamp

The hold-down on my benchtop mortiser doesn't hold workpieces as firmly as I'd like. If the workpiece twisted even just a little bit, the chisel would bind in the mortise. I needed a clamp to hold workpieces against the fence of my mortiser.

To do this, I added a "modified" C-clamp to an auxiliary base that I was building for my mortiser (left photos). It's designed to swing out of the way when not in use.

First, cut off the top leg of a 6" C-clamp (detail 'a') and round the cut end so it will swing easily. Then drill holes in the remaining part of the clamp for the pivot pin and locking pins.

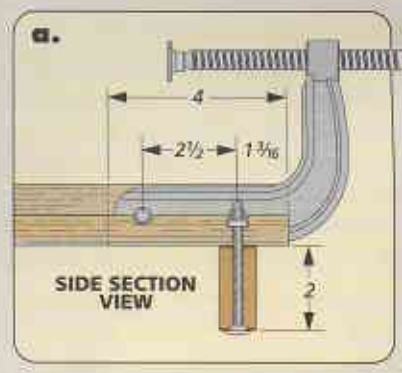
Next, cut two pieces of plywood that will serve as the base for the mortiser. Sandwiched between these plywood pieces will be the pivot and locking pins (main drawing below). Grooves must be routed in both halves for the pivot and locking pins (detail 'b'). For added stability, I attached a cleat so I could clamp the base in the vise on my workbench.

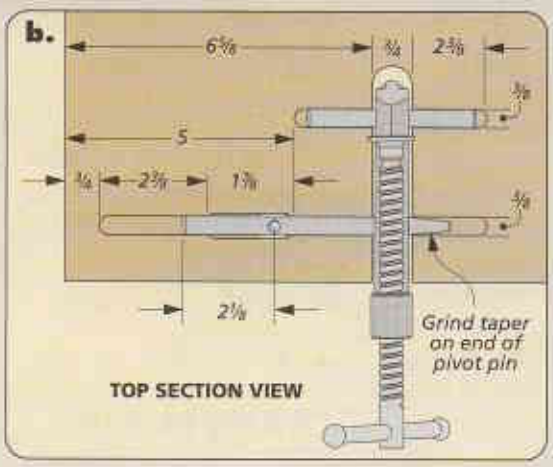
To be able to slide the locking pin back and forth, grind a flat spot onto the rod. Then drill and thread a hole through the flat spot to accept a carriage bolt pressed into a hardwood handle. A square nut between the slot and the rod allows a slight twist of the handle to tighten the locking pin in place.

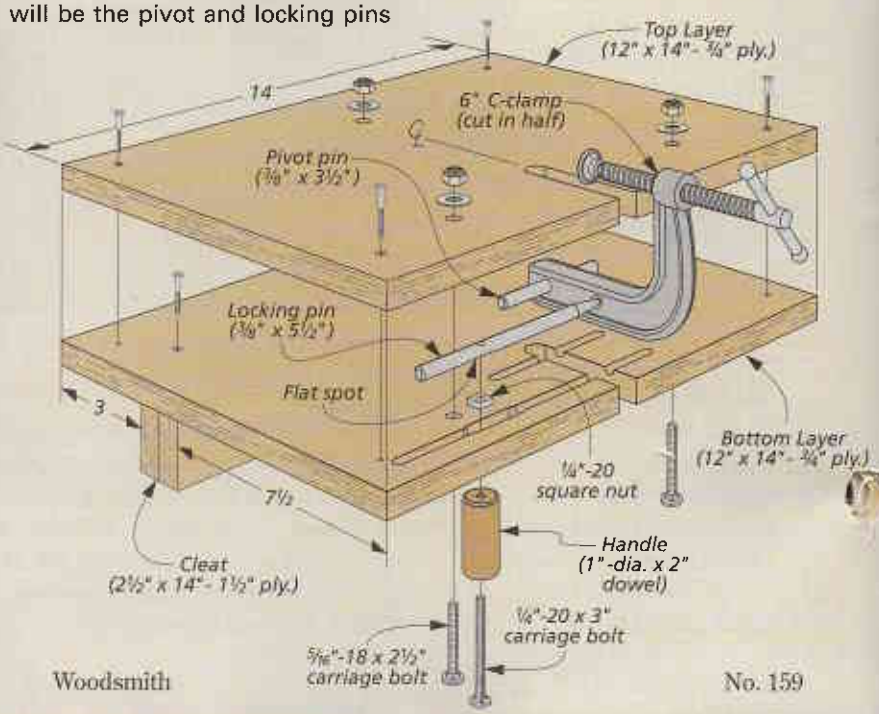
When I was satisfied that everything was working smoothly, I screwed the two plywood pieces together and bolted the base to my mortiser stand.

Donna Casperson
Dillsburg, Pennsylvania

C-clamp swings down and out of the way when locking pin is withdrawn.







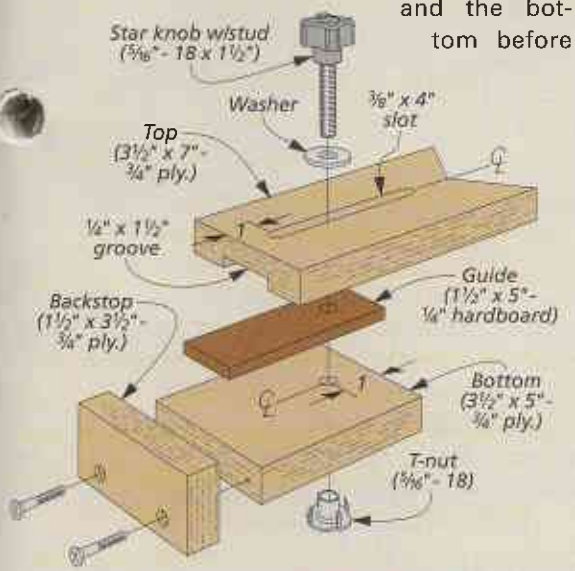
Drill Press Supports

Drilling centered holes in the ends of long workpieces (like a table leg) can be difficult because it's hard to control them on a drill press table. To solve the problem, I built two adjustable supports that use band clamps to hold the piece in position (see right photo).

I first measured the distance from the drill press column to the center of a Forstner-style bit chucked in my drill press. I used that dimension to determine the maximum distance I needed the support to reach.

Next, cut two plywood pieces slightly wider than the drill press column. In the top piece, I cut a V-notch that will wrap around the column to provide support (see drawing below). Then cut a groove in the top piece that will slide along a hardboard guide attached to the bottom piece.

To tighten the support adjustments, I cut a slot for a studded knob. The stud goes through the top piece, the hardboard guide, and the bottom before attaching it to a T-nut in the bottom. Finally, I drilled holes in the guide and bottom about 1" from the back edge to give me the most adjustment available and still be sturdy.



To use the supports, I tighten a band clamp around the top of the table leg and one support. The second support is against the bottom of the table leg and is adjusted so the leg is square to the drill bit. I just hold the bottom of the leg against the bottom support and drill into the top. The table leg won't move or wobble at all. These supports work great, and now I'm able to drill holes in table legs square to the tops of the legs.

Larry Fielding
Paris, Tennessee

Quick Tips

LEVEL WORKSURFACE

My family recently moved into an older house, and the garage floor had settled over the years. So, it's been difficult to get my workbench and tool stands level.

Since a new floor was out of the question, I added leveling feet to the bottom of the legs. I cut one leg of each fixture about 1" shorter than the other three and threaded a short lag screw into the bottom of the shorter leg.

Adjustment requires only a few turns with a wrench. Now I have level tools no matter where I use them in my shop.

Duane Bloomburg
Seattle, Washington

ZERO-CLEARANCE ADD-ON FOR CIRCULAR SAW

Occassionally, I have to use my circular saw to cut large panels of plywood. I made a zero-clearance base for my saw to prevent tearout on the top face.

To do this, I cut a piece of hardboard to match the size of the saw shoe. After rounding the front edge to prevent it from catching on the panel, I attach it to the shoe with carpet tape. Finally, I lower the blade to cut through the base.

Now I can get perfectly smooth cuts on both sides without worrying about tearout.

Carter Wesley
Oklahoma City, Oklahoma

Win This Porter-Cable Variable Speed Router

That's right, send us your shop tips. If your tip or technique is selected as the featured reader's tip, you'll win a Porter-Cable variable speed router just like the one shown here. Send your tips and techniques to: *Woodsmith*, Tips and Techniques, 2200 Grand Avenue, Des Moines, Iowa 50312. Or send us an email message at: woodsmith@woodsmith.com.

The Winner!

Congratulations to Malcolm Robb of Brantford, Ontario, Canada. His folding outfeed table was selected as the winner of the Porter-Cable router. His extension table provides the support he needs in his small basement shop.

To find out how you could win a Porter-Cable variable speed router, check out the information on the left.

smoother, quieter & safer

Reducing Table Saw Vibration

Dramatically improve the performance of your table saw by installing a couple simple upgrades.

Down in one corner of our shop, we have an older contractor's saw that no one really likes to use. This saw cuts just fine. The problem is that as soon as you turn it on, it shakes like a wet dog. And if you set a tape measure (or anything else) on top of the saw alongside the rip fence, it will dance around like crazy until it falls to the floor.

As bad as it sounds, this is actually a pretty common problem for contractor's saws. But a table saw like this isn't only annoying to use, it can be downright unsafe. Fortunately, the solution was a pretty simple one.

By replacing just a few basic parts, I was able to eliminate almost all the vibration in that saw. The difference was truly amazing. And all it took was an hour or so.

Now, your saw may not be as bad as the one I was dealing with. But if you have a contractor's saw that vibrates more than you'd like, chances are that it could benefit from the same kind of upgrade. Here's how to go about it.

VIBRATION. Most of the time, vibration in a table saw is caused not by the motor, but by the components that deliver power from the motor to the saw. The key to stopping vibration is to replace them with higher-quality components.

PULLEYS. Nearly all contractor's saws use two pulleys — one on the end of the motor and one on the end of the arbor shaft. But the pulleys that are supplied with most saws are usually low-grade ones. Typically, they're made out of cast iron or zinc (see photo at left).

The problem with these pulleys is that most of them aren't truly round. Just like a tire on your car that isn't balanced, a pulley that

Good
Die-cast zinc pulleys are often misshapen and out of balance.

Better
Cast iron pulleys are better at dampening vibrations, but can also be out of balance.

Best
Machined steel pulleys are perfectly round and run smoothly.

wobbles can cause your whole saw to shake and vibrate.

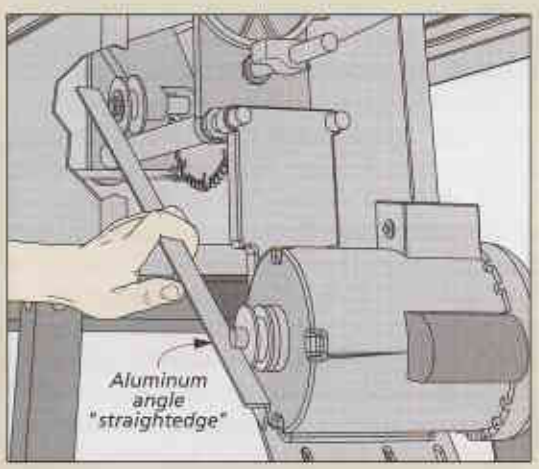
So the first step I took was to replace the cast pulleys with machined steel pulleys. Because these pulleys are turned on a lathe, they're perfectly round.

Depending on your saw, replacing the pulleys is usually just a matter of loosening a set screw on the old pulley and sliding it off the shaft. (You may need to use a gear puller to remove a really stubborn pulley.) Then just slip the new pulley onto the shaft and tighten the set screw.

There's one thing you'll also want to check when replacing the pulleys. To avoid excess wear on the belt, the pulleys need to be aligned with each other, see drawing below. If they're not, you'll need to shift the motor slightly until they line up.

LINK BELT. Although replacing the pulleys is a good start, I've found that the biggest improvement you can make to your saw is to replace the rubber V-belt with a link belt, like the one you see in the main photo on the opposite page.

When you first look at all the segments in a link belt, it's hard to imagine that it will actually run smoother than an ordinary V-belt. But they work so well that I've got a link belt on every belt-driven machine in my shop.



Aligning the Pulleys. *A piece of aluminum angle makes a good straightedge to help align the pulley on the motor with the pulley on the saw arbor.*

Made out of polyester fibers and urethane, link belts last longer than ordinary V-belts. And they're resistant to oil and chemical spills as well. But their biggest advantage is in how smooth they run.

Ordinary V-belts are made up of continuous bands that run the length of the belt. Any vibration at the motor simply travels along the belt to the saw. But because link belts are made up of individual segments, the vibrations are stopped dead in their tracks.

Rubber V-belts can also be prone to taking a "set" if they sit too long without running. They develop a hump where they wrap around the pulleys and this can cause them to run rough. But link belts don't have any "memory," so they always run nice and smooth.

▲ **Follow the Arrows.** Unlike ordinary V-belts, link belts are designed to run in one direction. Arrows printed on the belt indicate which way it should run.

Another advantage of link belts is that you can make up a belt of any length by simply adding or removing links. A tab on the end of each link fits through holes in the next two links. (See the series of photos in the box below to see how the links are connected.)

RESULTS. Adding these upgrades to your contractor's saw doesn't take much time or cost a lot of money. But in terms of performance, the difference they can make in how smooth your saw runs is remarkable. For more information on where to purchase these upgrade items, see sources on page 49. W

Smooth Operator: Linking It All Together

Insert the Tab. To connect the ends, start by turning the belt inside out. Then insert the tab end of the belt into the second to the last hole on the other end.

Twist in Place. Make sure the tab passes through the overlapping holes in the last two links of the belt. Then twist the ends of the belt to lock the tab in place.

Second Tab. Using needle-nose pliers, reach through the remaining hole at the end of the belt and grasp the tab below. Twist the tab and pull it through the hole.

Reverse the Belt. After checking to make sure the ends are securely fastened, turn the belt right-side out and slip it over the pulleys on your table saw.

3 must-have Band Saw Blades

The right blade will allow you to cut faster, smoother, and work more efficiently. Here's what you need.

When it comes to buying a band saw blade the choices, from tooth shape, to width, to the number of teeth per inch, and even price seem almost endless. Unfortunately, there isn't one blade that will do it all. But, over the years, I've narrowed it down to three blades that handle just about all of the work I need to do with my band saw.

THE MAIN BLADE. The first blade is also the one I use the most — a ¼"-wide blade. It's the middle one in the photo at left. If there was a blade that would come close to being a "jack-of-all-trades," this would be it. The one I use has 6 teeth per inch, which makes it cut well in both thick and thin stock.

The width of this blade strikes a good balance between curve cutting and straight-line cutting. I can cut curves down to a ⅜" radius. And it's still wide enough to resist twisting and deflecting during a straight cut.

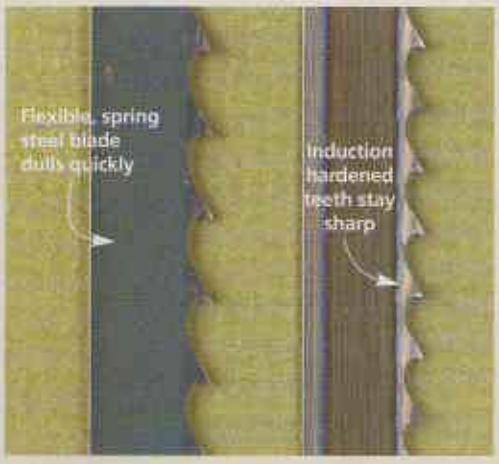
STRAIGHT BLADE. The second blade I'd choose is a ½"-wide blade with 3-4 teeth per inch. (The left blade in the photo at left.) It does a great job of ripping thick stock without wandering. I like to use this blade for ripping a straight edge on a crooked board. And you'll find the blade will do just fine for the occasional resawing job. The extra width prevents it from flexing or bowing in the cut.

If you plan on doing a lot of resawing, you may want to pick up a blade specifically designed for that task. You can read more about a couple of them in the box on the opposite page.

CURVE-CUTTING BLADE. The final blade in my trio is a narrow (⅛") blade for cutting tight curves (right blade in photo on the opposite page). I picked one with 14 teeth per inch. Having this many teeth means it leaves a pretty smooth cut so I don't have to spend a lot of time sanding afterwards. Even though the high tooth count means this blade will cut slower than the other blades, it still cuts faster than any scroll saw. This means you cut can fine details accurately and quickly.

BLADES UP CLOSE

While each of my top three blades are suited to a few specific functions, they do have several characteristics in common. These include the tooth shape, the way the teeth are formed, and the type of steel used to make the blade. To see why I like these blades so much, it helps to take a closer look at these features.



▲ Inexpensive spring steel blades (left) are very flexible but won't stay sharp long. By induction hardening the teeth only, high-quality blades can combine flexibility with a blade that stays sharp longer.

BLADE STEEL. The first thing these blades have in common is the steel used to make them. Band saw blades need to be flexible so they can bend around the wheels of the saw without breaking. But the teeth also need to be hard to stay sharp for a long time.

One option is to make the blades from spring steel. These blades are the most flexible and last a long time, especially on smaller, benchtop saws. However, the soft teeth will dull quickly and are more suited to cutting thin stock. This type of blade is the one shown on the left in the photo at the bottom of the opposite page.

The blades I like to use have soft, flexible backs and hard, sharp teeth. To do this, blade manufacturers apply a little technology. They start with a flexible steel alloy. The teeth are then hardened through an electrical induction process. An electrical current only hardens the teeth, leaving the back of the blade untouched.

The result is tough, long-lasting teeth on a blade that won't break under the stress. This is shown in the right blade in the lower photo on the opposite page. Even though these blades cost more than spring steel blades, the difference is more than made up for by the quality of the cut and the longer blade life.

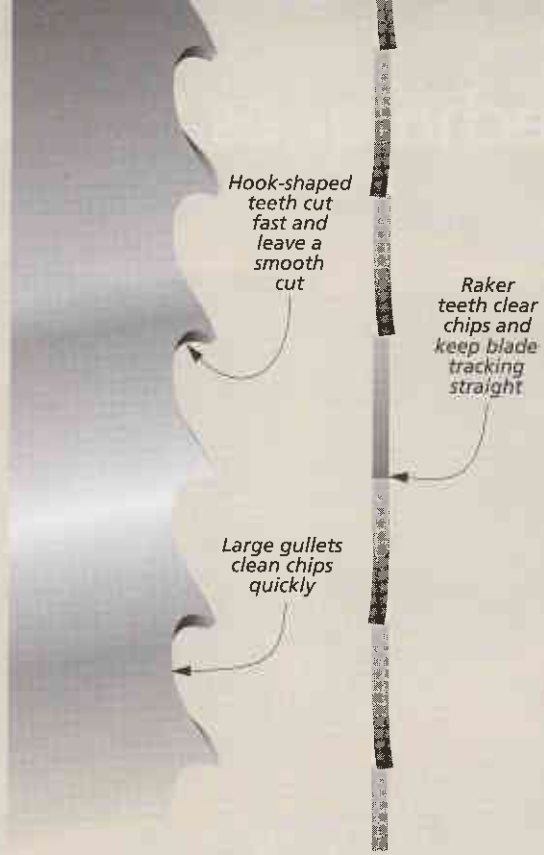
GROUND TEETH. While the blade steel is important for the durability of the blade, the teeth are where the the action is. There are two things to look at here: how the teeth are formed and their shape. Teeth can either be ground or stamped. I steer clear of stamped blades. Stamped teeth aren't very sharp. They'll often have burrs on the edges and a blunted or deformed look from being punched out.

The better choice is ground teeth. These teeth are precisely cut and have crisp, sharp edges for smooth, accurate cuts. So, how can you tell if the teeth on a blade are ground? Side by side the difference is hard to see unless you have a magnifying glass. The best way to know is to see if it's featured on the packaging. Another indicator is price. The most inexpensive blades are likely to be stamped to save on costs.

TOOTH SHAPE AND SPACING. The other feature of the teeth to look at is their shape. Here, the choice is between speed and quality of cut. The shape, as well as the number of teeth per inch, affects the speed and smoothness of the cut.

The blades I use have hook-shaped teeth. You can see how they look in the drawing at right. The forward tilt of the teeth allows the blades to cut quickly and smoothly.

As for spacing, also called pitch, the greater number of teeth per inch (tpi), the cleaner but slower a blade will cut. Fewer and larger teeth are more suited for thick stock. They'll cut faster and, in general, leave a rougher surface.



Hook Teeth. A blend of fast cutting and smooth edges. The downward-pointing, hook-shaped teeth quickly slice through stock while leaving a clean cut edge. Raker teeth clear chips and keep the blade cutting straight.

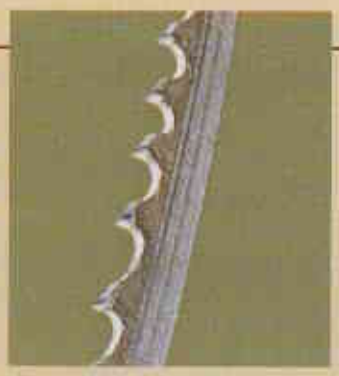
One of the best things about band saw blades is that you don't have to spend a lot of money to get all this technology. In fact, at about $25 each, you can get all three blades for the price of a good table saw blade. To find out where you can find these blades, take a look at the sources on page 49. W

Shop Tips: Resaw Blades

Resawing thick stock into veneer or thinner stock places a lot of strain on a band saw and the blade. This can lead to slow, rough cuts that can wear out a blade quickly. But blade makers have come up with a couple unique solutions to these problems.

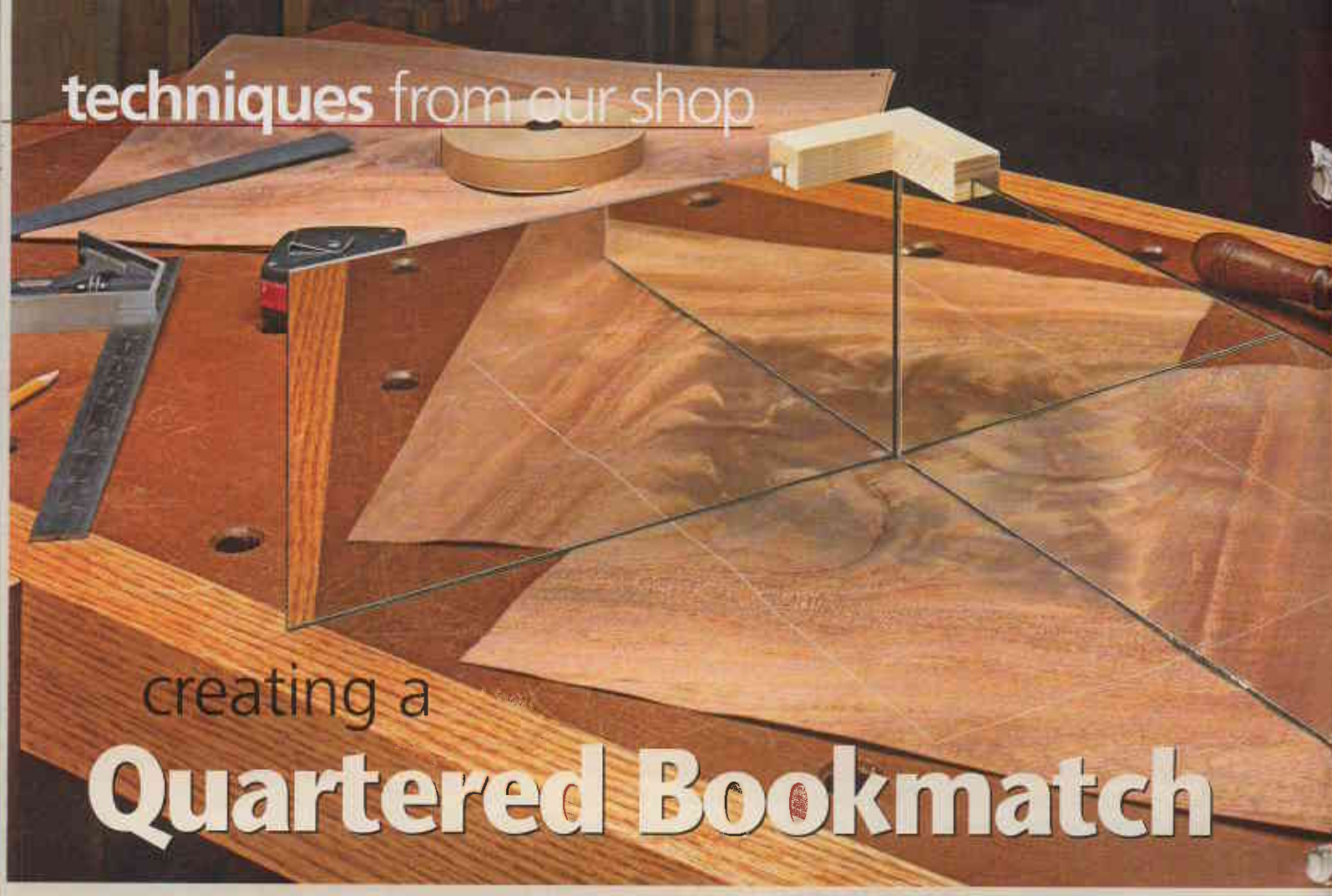
CARBIDE TIPPED. The *Tri-Master* blade (left photo) has carbide teeth like those on a table saw blade. The result is a thick, heavy-duty blade that makes clean cuts and resists heat buildup.

THIN KERF. The blade in the right photo takes a different approach to resawing. The *Wood Slicer* is made from thin, flexible spring steel. Unlike inexpensive blades though, the hook-shaped teeth are ground (not stamped) and electro-hardened to stay razor sharp. This blade's kerf is only half the width of a typical band saw blade. So the cut is fast and very smooth.



The carbide-tipped teeth on the *Tri-Master* stay sharp for a long time, cut smoothly, and can be resharpened.

The *Wood Slicer* features hardened teeth on a thin, flexible back. It leaves a narrow kerf and cuts quickly.



creating a Quartered Bookmatch

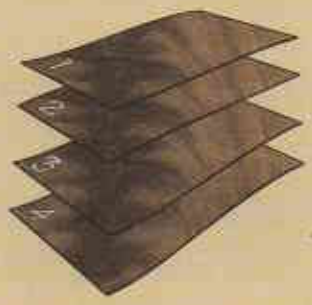
One of my favorite veneer patterns is the traditional, quartered bookmatch. This pattern is made by joining four bookmatched (opened like the pages of a book) pieces of veneer at right angles around a centerpoint. The figure of the veneer ends up being "mirrored" between the pieces to create a really interesting and unique looking design.

IN A NUTSHELL. To make a quartered bookmatch, you start with four large, consecutively sliced pieces of figured veneer — like the mahogany crotch shown in the photo above. From these pieces, you pick a section from which to cut four smaller pieces to make the pattern. Next, the edges of the small pieces are jointed and taped together in the arrangement shown in the box below. And finally, the pattern is glued down.

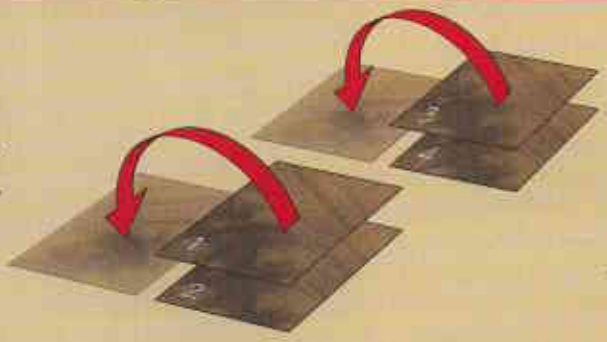
GETTING STARTED. The first step is to decide what section of the large veneer sheets to use for your pattern. The photo above shows how to do this without guesswork.

I made an L-shaped, slotted piece of wood to hold two mirrors

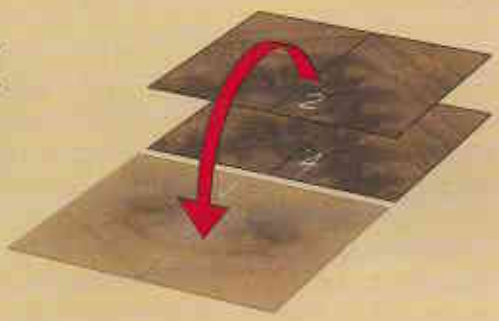
How-To: Lay Out a Quartered Bookmatch



A Stack. *The process starts with four matched pieces of veneer, numbered and stacked in order.*



Two Pairs. *Take the first two pieces and flip the top piece. Lay it alongside the second piece to create a matched pair. Do the same for pieces three and four.*



Flip One Pair. *To complete the pattern, stack your two pairs and then flip the top pair along the joint line and butt it to the lower pair.*

at right angles. When you place them on the veneer, you'll see a reflection of the pattern created at that particular spot. Just move the mirrors around until you find a pattern you like. Then mark along the bottom edges of the mirrors and use a straightedge and square to measure and mark the other two sides of the pattern piece.

After using the mirrors to find and lay out the pattern, all four sheets are stacked and the pieces rough cut to size at once. Masking tape keeps the sheets of veneer aligned.

ROUGH CUT. The next step is simply to rough cut the four, pattern pieces to size. Here, I should note that to get perfectly bookmatched joints, it's important to keep the pieces you use for your pattern in order and perfectly aligned. This is just as simple as keeping the pieces numbered and aligned with masking tape when you work on them.

So, now you want to stack the four, large sheets of veneer in order, line up the edges and tape them together. Then cutting to the outside of the layout lines, cut the four matching pieces all at once, as shown in the photo below. And don't forget to transfer the numbers to the pieces after they're cut.

JOINING THE PATTERN. With the four pieces in hand, you can start work on joining them together. To complete the pattern, the four pieces have to be accurately joined at right angles, as shown at the bottom of the opposite page. This might seem like a pretty tall task, but the simple technique I used actually made the job go smoothly. The step-by-step drawings at right show you how it goes, so I'll just hit the highpoints.

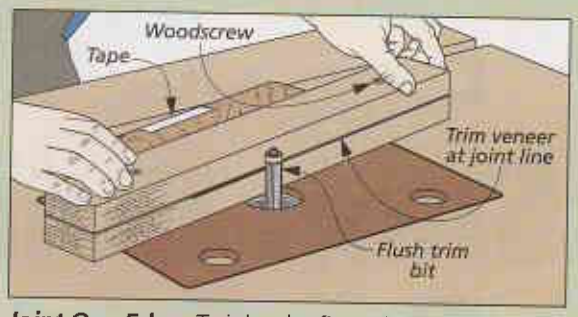
The edges of the veneer that are going to be taped together need to be jointed perfectly straight. With thin, fragile veneer this a challenge. As you can see, a pair of straight cleats and a flush trim bit on the router table solves the problem.

Another trick lets you avoid having to cut the second joint at a perfect right angle to the first. Instead, the four pieces are first jointed and taped into two halves. Then the two halves can be easily jointed to finish the four-piece match.

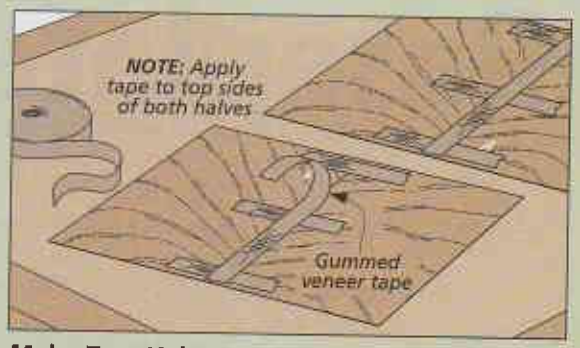
Once you've trimmed the second joint line, the pattern is completed by lining up the center joints and taping the two halves together.

That's all there is to it. The quartered bookmatch is now ready to lay. And when the clamps come off, you'll have a one-of-a-kind panel. W

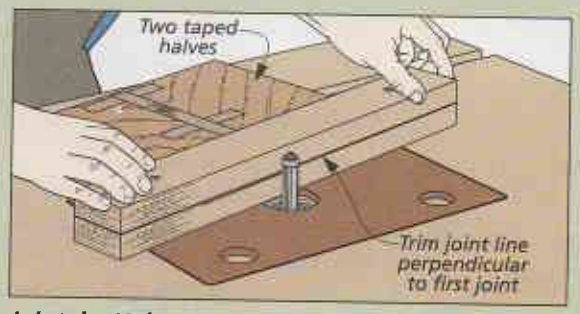
How-To: Join the Veneer



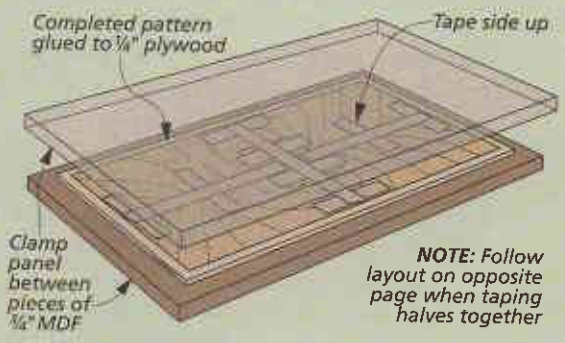
Joint One Edge. *To joint the first edge, all four pieces are stacked together and then pinched between the cleats. Align the joint line with the cleat edges.*



Make Two Halves. *With one edge of each piece jointed, the pieces can be taped into bookmatched halves. Follow the middle step on the opposite page.*

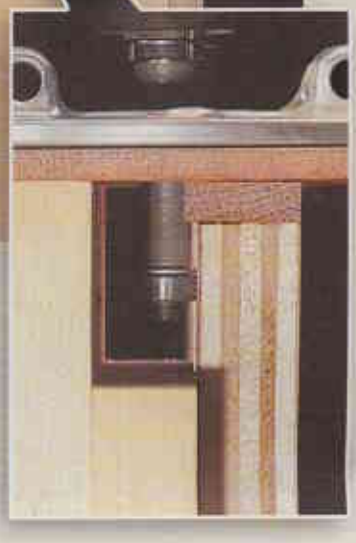


Joint the Halves. *Now, stack the two halves and place them between the cleats. Position them so the jointed edges will be as close to perpendicular as possible.*



Complete the Job. *After taping the two jointed halves tightly together with veneer tape, the veneer pattern is ready to lay. You want the taped side facing up.*

5 favorite Shop-Built Router Baseplates



Sometimes all it takes to get more out of your router is to simply upgrade the baseplates.

When you think about it, a router is a pretty simple tool — just a motor spinning a bit at high speed. It can be with a variety of jigs and accessories to do almost anything. But in our shop, we've found that many times all you really need to do to get more capability is add a new baseplate. Here are our favorites.

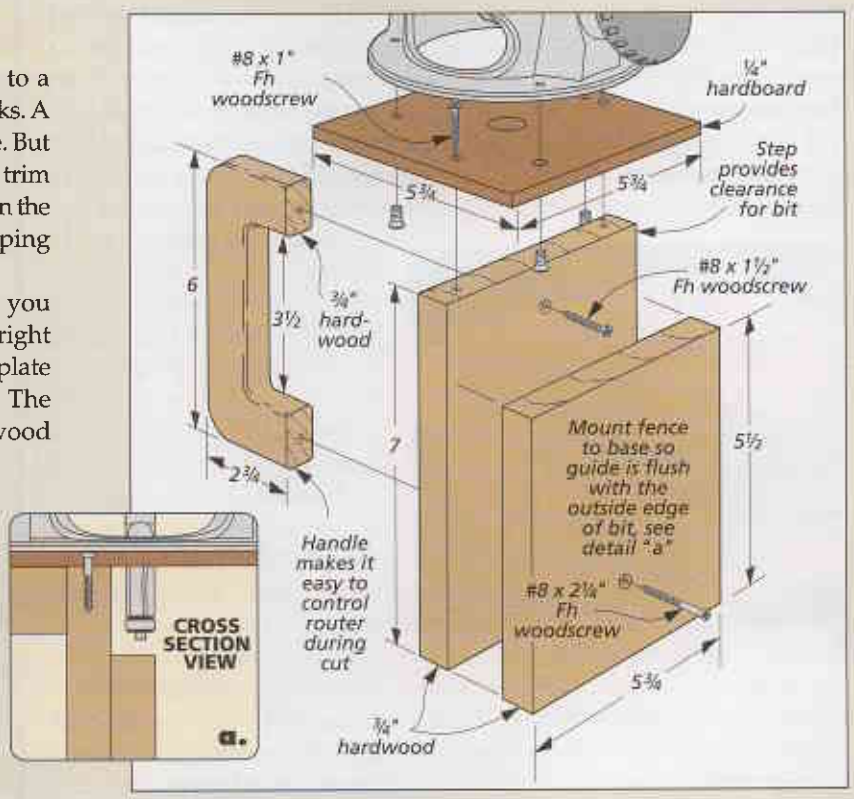
1 Flush Trim

Trimming hardwood edging flush to a plywood panel isn't one of my favorite tasks. A block plane and some sandpaper work fine. But for big jobs, I like to use a router and flush trim bit. The challenge is supporting the router on the narrow edge and preventing it from tipping and spoiling the workpiece.

That's where the flush trim baseplate you see in the photo above and drawing at right comes in. It consists of a hardboard baseplate that's connected to a two-piece fence. The fence rides against the face of the plywood panel to hold the router steady.

A step at the top of the fence provides clearance for the bit, as shown in the inset photo above. I screwed a handle to the outside of the fence to provide a convenient handhold.

When attaching the fence to the baseplate, you'll want to take care that the inside face of the fence is flush with the edge of the router bit (detail 'a'). This will ensure the cut is accurate.

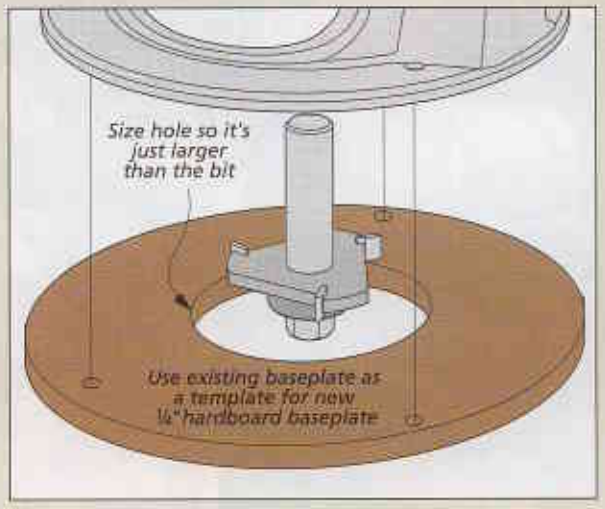


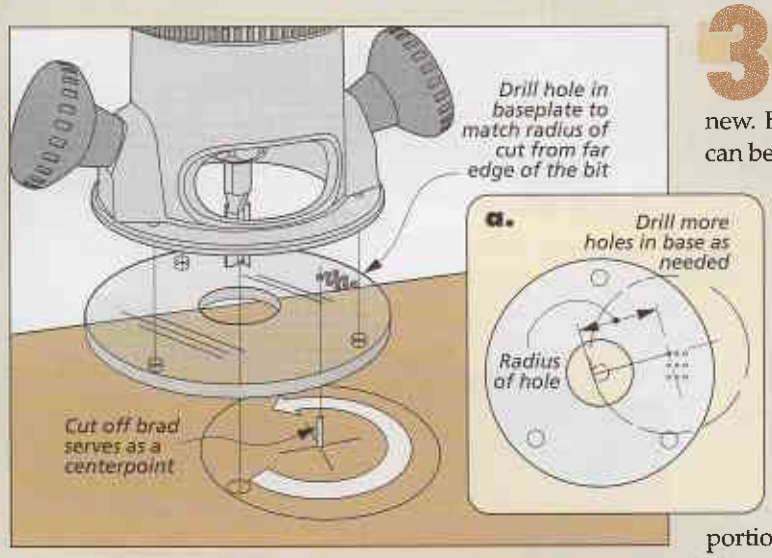
2 "Big Mouth"

Sometimes, all it takes is a small change to make a big difference. And the baseplate shown at right is a good example.

The center hole in the baseplate that came with my router accommodates most of the bits I use. But when I need to use large bits like a slot-cutting bit, the regular baseplate won't work. To get around this, I made another baseplate from ¼" hardboard and simply drilled a large hole big enough for the slot-cutter bit to fit through.

Making this baseplate is pretty straightforward. Start by using the existing base as a pattern to mark and drill the mounting holes and locate the new center hole. After tracing the baseplate on the hardboard, I cut it out oversized on the band saw. The last step is to clean up the edges. For this I attach the original baseplate to the new one with carpet tape. Then with a flush trim bit installed in the router table, you can smooth out the edges for a perfect match to the original.





3 Circle-Cutting Base

Using a router to cut circles is nothing new. But for smaller holes and circles, big jigs can be overkill. To rout these holes and circles, I came up with this "mini-trammel."

It's nothing more than an auxiliary baseplate and a cut-off brad. To use it, I drill a small hole in the baseplate in a position that matches the radius of the hole or circle I want to rout. The small hole fits over a brad tapped in the centerpoint of the circle (drawing at left). You can drill additional holes in the baseplate to accomodate other size circles. A starter hole in the waste portion makes it easier to start the cut.

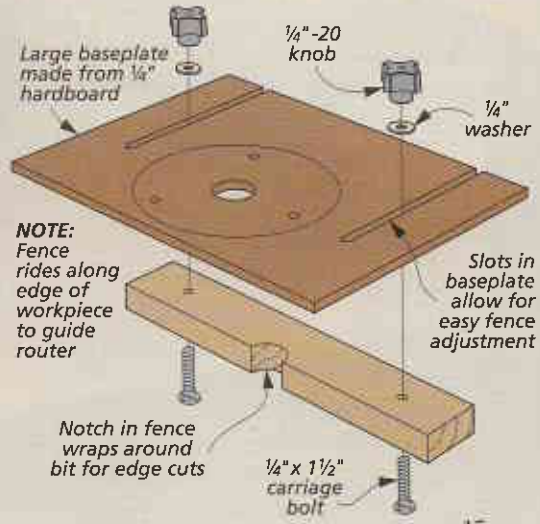
4 See-Through

When it comes to routing small details like the hinge mortise you see below, the standard router baseplate can make it seem like you're looking into a cave. It's just too dark to see what's going on.

To shed some light on the subject, I made a simple base from clear polycarbonate (like *Lexan*). This shatter-resistant plastic makes it easy to see just what I'm doing and get better results.

5 Edge Guide

One last baseplate that comes in handy is the edge guide shown below. With it, I can use my hand-held router to rout parallel grooves, dadoes, and even add decorative touches, like the flutes shown in the photo below. The key to this baseplate is the adjustable fence (drawing below) that rides along the edge of the workpiece. It's attached to a large, hardboard base with a few bolts, washers, and knobs. W



patio Planter Box

▲ Easily expandable, this planter box will showcase lots of potted plants and is easy to build.

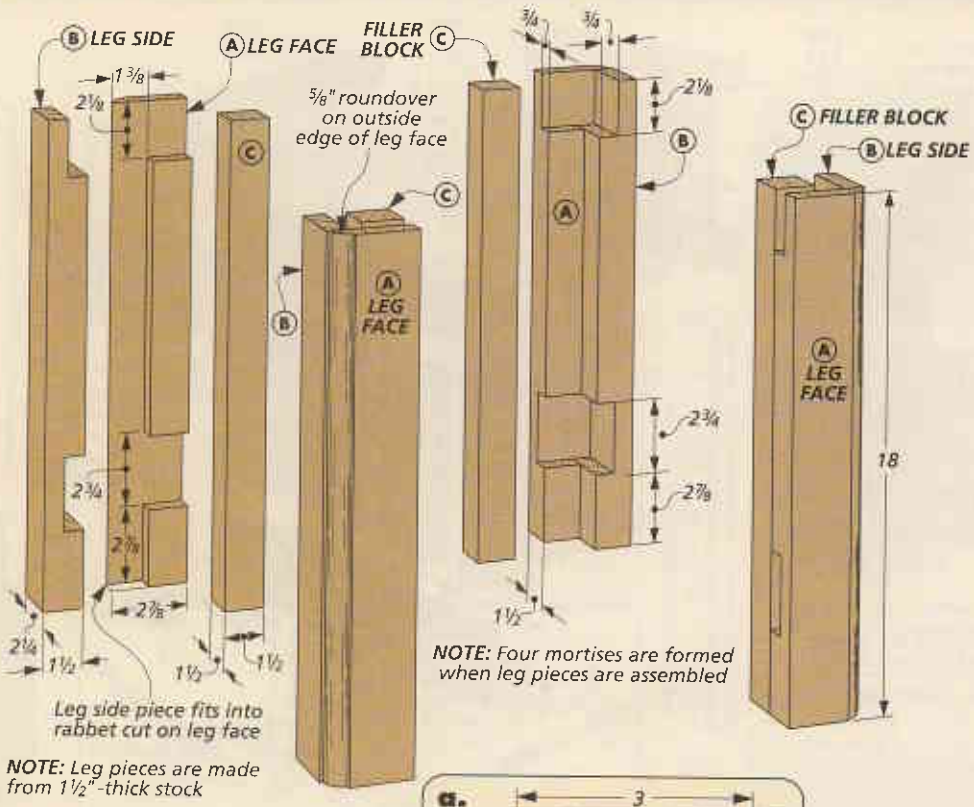
A couple of tools and some basic woodworking skills are all it takes to build this durable planter.

I wanted a planter box to really show off the potted plants on my patio. It not only needed to look great, but I also wanted it to be sturdy enough to last a long time. That's what I found in the patio planter shown above.

It may look like a lot of other planters you've seen, but it's certainly not built like the rest. You'll find you won't need to do a lot of tedious hand work or use a lot of special tools to build this one.

It's designed to withstand the weather so you can use it outdoors. And since you can use construction lumber to build it, it's also easy on your budget.

making the LEGS



One of the interesting features of this planter box is the construction of the legs. Each of the legs is made of three separate parts that go together to create a solid leg post.

You'll also notice there are four mortises in each leg. They accept the tenons on the side rails of the box. They're quite easy to make.

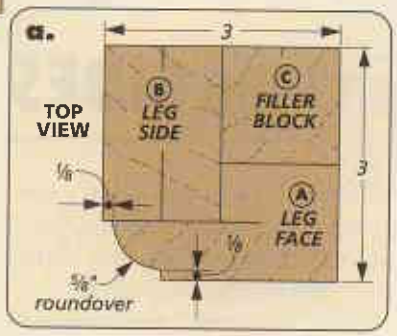
You won't need to do a lot of drilling and chopping out waste to make these mortises. That's because they're made by simply cutting dadoes in the leg pieces. Then when you put the three leg pieces together, these dadoes automatically form the mortises.

DADOES AND RABBETS. The easiest way to cut the dadoes and rabbets is on your table saw. A few simple setups like you see in the box below are all you'll need.

To make the fewest passes, set your dado blade as wide as possible. Next, add an auxiliary fence to the miter gauge to minimize chip out. Then by making a series of dado cuts at the top and bottom of the *leg face (A)* and *leg side (B)*, you'll be able to size the dadoes to the right width. The second and third drawings at the bottom of the page will help you do this.

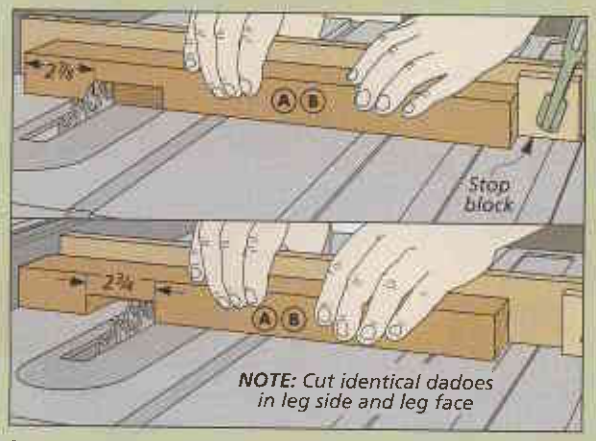
EDGE RABBET. Next, I attached an auxiliary fence to the rip fence and cut a wide rabbet along one edge of each leg face piece. This rabbet captures the leg side and forms the two outside faces of the leg.

After cutting the rabbets, I added a decorative look by routing a 5/8" roundover along the outside edge of the leg face (see detail 'a').

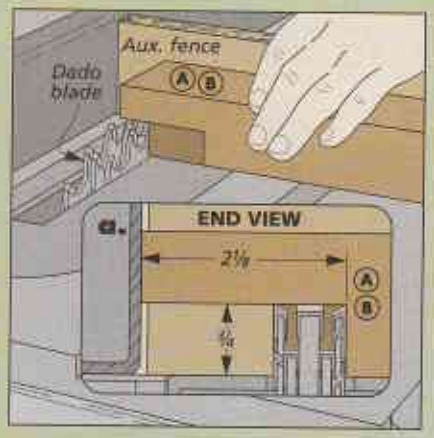


A square *filler block (C)* on the inside completes the leg. You'll want to use waterproof glue to hold the pieces together before you move on to building the sides.

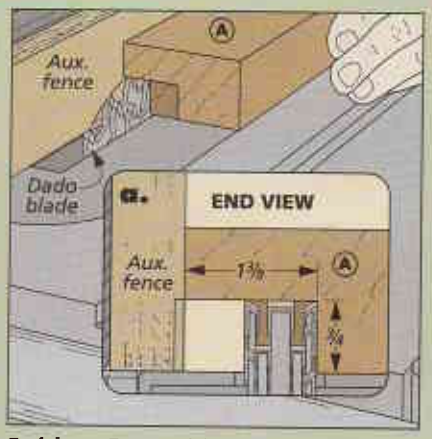
How-To: Rabbet and Dado Joinery



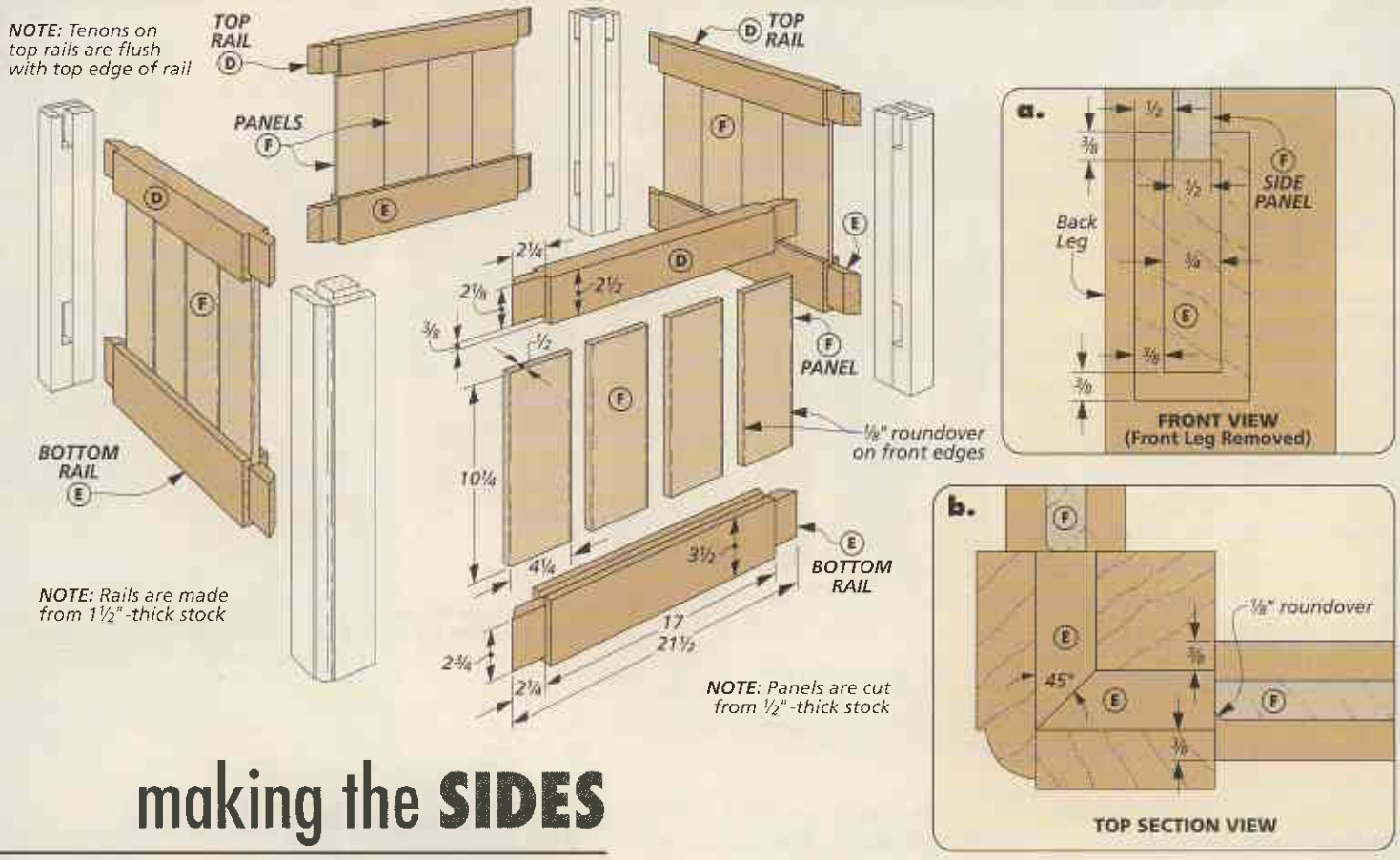
Lower Leg Dado. *Using your rip fence as a stop at one end and adding a stop block at the other end lets you accurately locate the dadoes on the lower leg face.*



Top Leg Rabbet. *A wide dado blade and an auxiliary fence on the miter gauge will help you cut the top leg rabbets.*



Rabbet Cut. *With an auxiliary fence attached to your rip fence, a couple of passes will cut the rabbet along the edge.*



making the **SIDES**

With the legs assembled, it's time to make the sides. To do this, you'll start by making rails and panels and then adding a top frame.

Here, it's a good idea to make all the pieces and dry fit them before you glue them up. That way, there won't be any surprises when it's time to assemble the planter box.

I used a couple of different colors of exterior house paint to protect the wood and add contrast to my project. You can either paint the pieces before you put it together or after it's assembled. If you decide to paint it beforehand, be careful not to paint the gluing surfaces.

MAKE THE RAILS. The first step is to make the rails that will join the four legs. After cutting the *top* and *bottom rails (D, E)* to length, you'll need to center a groove along one edge of each of the rails. This groove will hold the side panels.

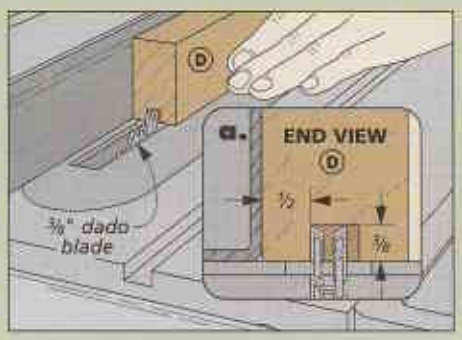
It's easy to do. Just set your dado blade to make a ⅜"-wide cut. Then cut the groove like you see in the first drawing below.

CUT THE TENONS. With the grooves cut, you can now focus your attention on cutting the tenons on the ends of the rails. You'll want to size them to fit into the top and bottom mortises you made in the legs.

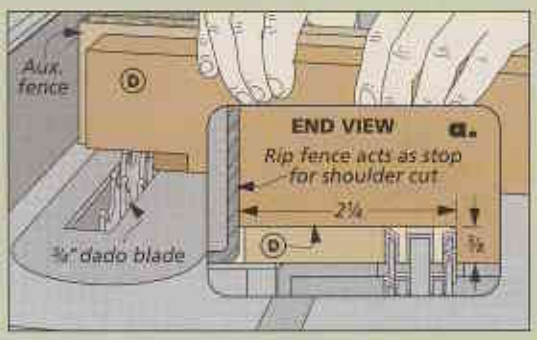
You'll need to use your dado blade again for these cuts. A wide blade setup will save you time.

I made the top and bottom shoulder cuts first and then cut the cheeks at the sides of each rail. The second and third drawings below will help you complete this step.

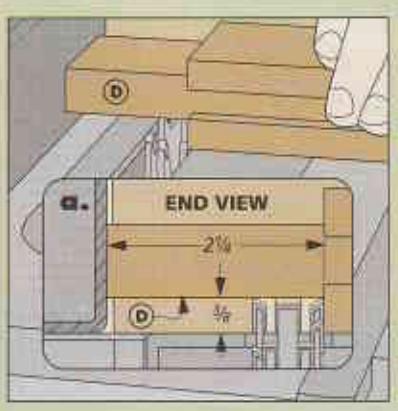
How-To: Rail Groove and Tenons



Centered Groove. *Set the rip fence ½" from the blade. Make a pass along the edge, flip it end for end and make another pass.*



Cutting the Top Shoulders. *Using the rip fence as a stop, adjust the blade height and cut away the shoulder waste. Sneak up on the length.*



Cutting Tenon Cheeks. *Without changing any settings, you can quickly cut away the cheek waste.*

After finishing the tenons, I mitered the ends of each one at 45° (detail 'b' opposite page). This lets the ends of the tenons butt against one another for stability.

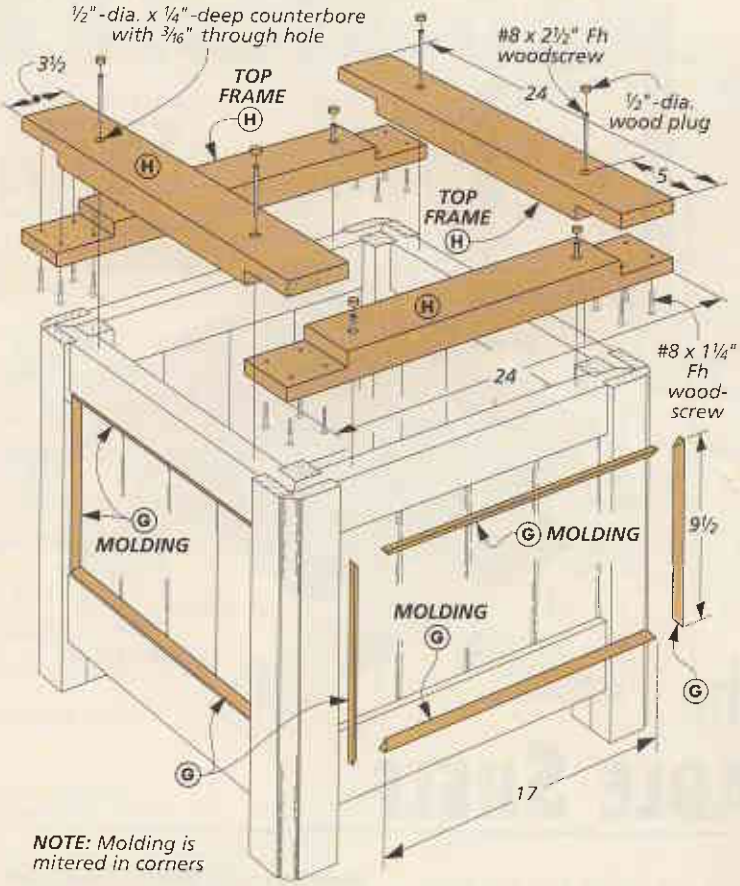
SIDE PANELS. To enclose the sides of the box, I cut four *panels (F)* to fit between the rails and the legs (see drawing opposite page). Then I used my router to make a 1/8" roundover along the front edge of each of the panels. This gives the sides a nice finished look when the panels sit next to one another.

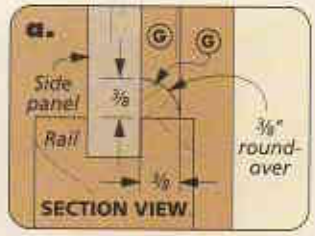
Completing the sides of the planter box is simple. Assemble the legs and bottom rails. Then slip the panels into the grooves you cut in the rails. Finally, add the top rail.

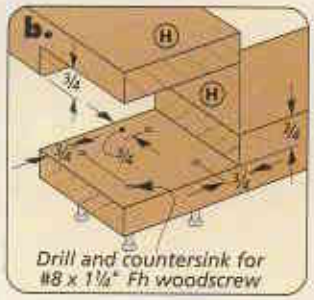
SIDE PANEL MOLDING. Before moving on to the top frame, I took a few minutes to make *molding (G)* to cover the panels along the inside of the legs and rails (see drawing and detail 'a' at right). This adds a bit of a decorative touch and helps hold the panels in place. But more importantly, it keeps rain water from pooling along the rails.

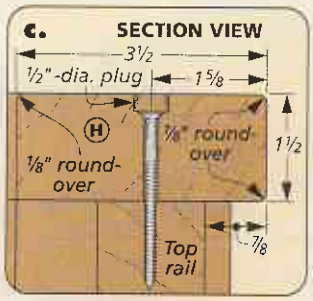
A trip to the router table is all it takes to make this molding from a piece of extra-wide stock. The first two drawings below will show you how this is done.

TOP FRAME. The planter box will be subjected to all types of weather. So it's important to cover the top edges and top corners of the box. This is done by adding a flat protective *top frame (H)* to the box.









Since miters tend to open up due to changes in temperature and humidity, I decided to use half-laps at the corners. They also keep the sides square and add strength to the planter box once it's assembled.

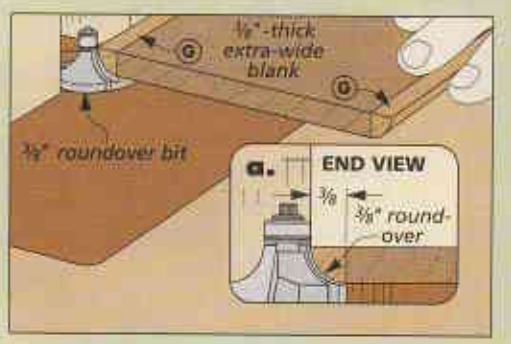
First, cut the top frame pieces to length. Then use your dado blade to cut half-lap joints at the ends.

Finally, complete the top frame by securing the half-laps with screws like you see in the drawing and detail 'b' above. Then fasten the frame to the top of the legs and top rails with long countersunk woodscrews (detail 'c' above).

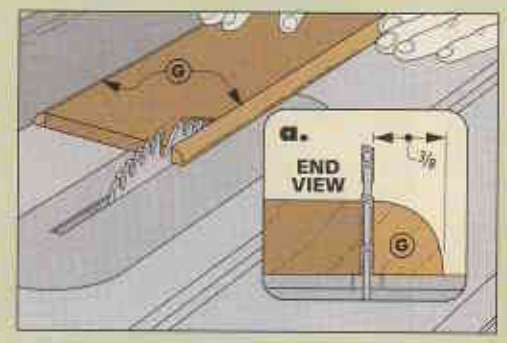
I used wood plugs to keep water out of the holes. Just insert them in place and cut them off flush with the top frame, like you see in the last drawing below.

Now all that's left is to complete the inside of the box. That means making a shelf to hold the plants.

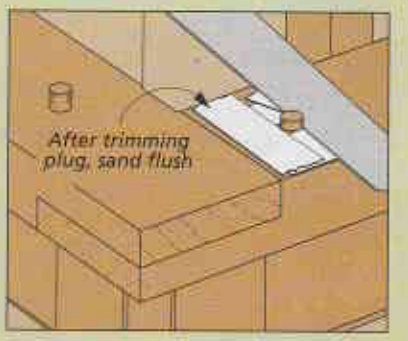
Panel Molding and Plug Trimming



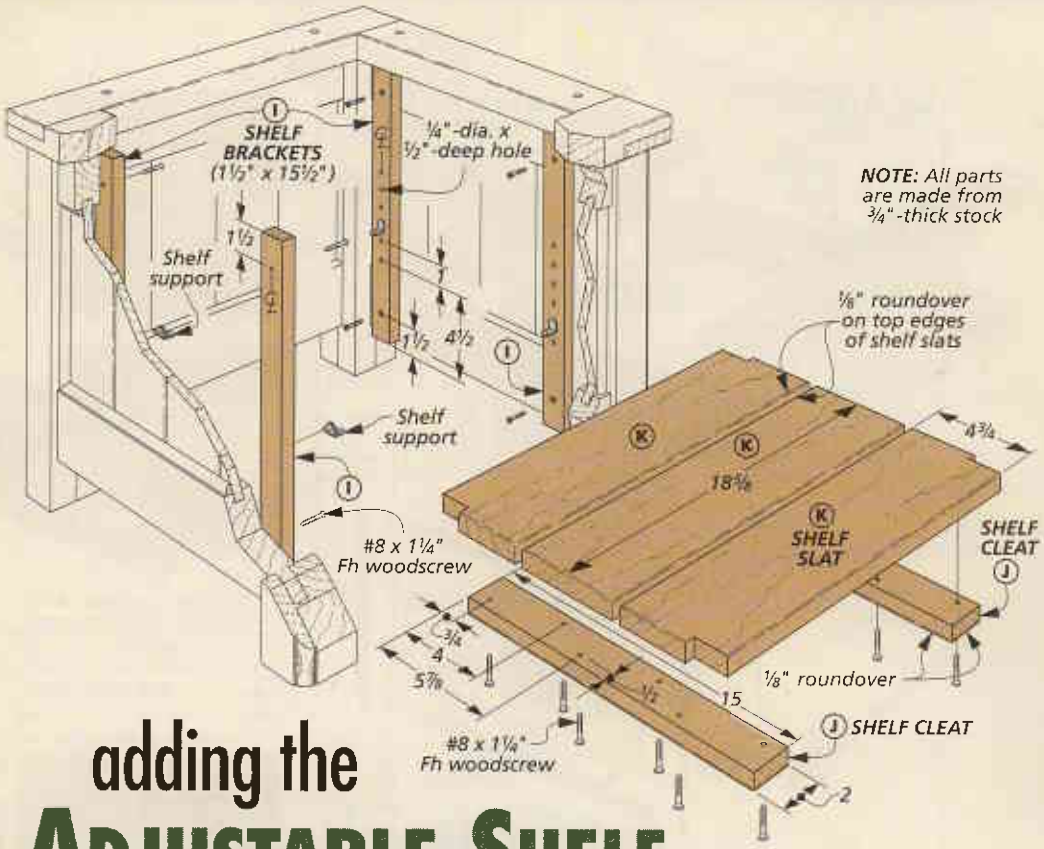
Rout Roundover Edges. *At the router table, make the molding by first routing a roundover along the edges of an extra-wide blank.*

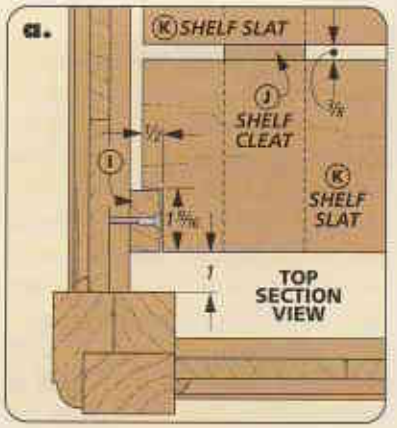


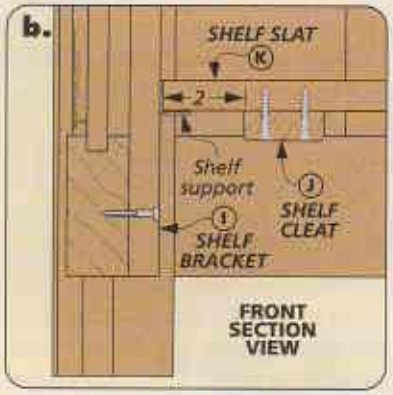
Cutting Molding From Blank. *After routing the roundover, it's easy to use your table saw to cut the molding to the desired width.*



Flush Trimming Wood Plugs. *Applying tape around the plug helps prevent saw marks on the top frame.*







adding the ADJUSTABLE SHELF

After the top frame and sides are completed, there's only one thing left to do — add the adjustable shelf. The shelf consists of three slats and two cleats like you see in the drawing above. Vertical brackets inside the planter have holes that accept shelf supports. These allow the shelf to be raised and lowered to match the height of the potted plant.

ADJUSTABLE SHELF BRACKET. The shelf rests on supports set into four vertical brackets screwed to the inside of the box. Since the shelf needs to be adjustable, I drilled holes 1" apart, starting 4½" from the bottom of the bracket to accept the shelf supports. Then by simply moving the supports up or down, it's easy to quickly accommodate a variety of different pot sizes. The brackets are secured to the rails with woodscrews (see detail 'b' above).

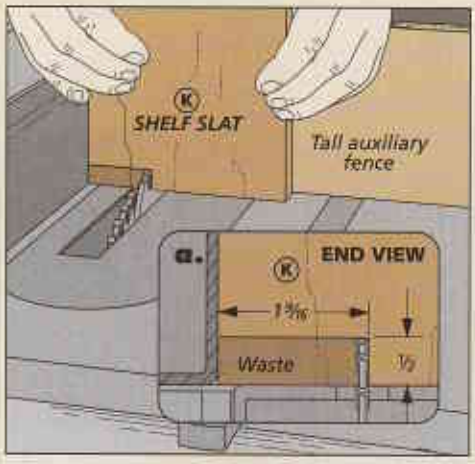
SLATS. Now you can turn to the slats. It's a good idea to measure between the sides of the box at this point to make sure that the shelf is sized to be easily raised and lowered. I cut the slats to a length that would leave 1" of clearance between the end of the slats and the legs of the box.

To allow for water to drain between the slats, I left a ⅜" gap between each of the slats, like you see in detail 'a' above. You'll also need to cut a notch at each of the corners to make room for the shelf brackets. The box below shows you how this is done.

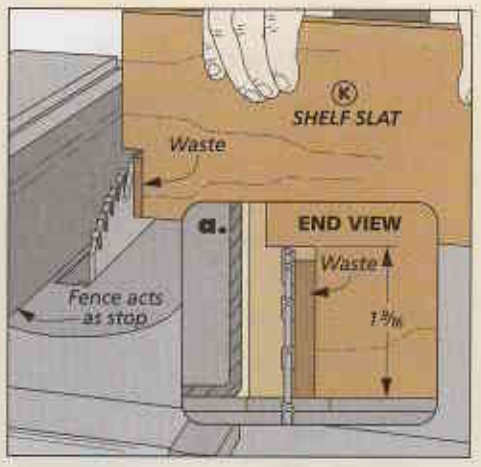
SHELF CLEATS. The cleats complete the shelf assembly. They are made from ¾"-thick stock cut to a width of 2". I made my cleats 15" long. This allows plenty of room between the end of the cleats and the sides of the box.

Now all that's left to do is to paint and assemble the planter box. Then you can fill it with plants, and it's ready for you to enjoy for years to come. W

Shop Tip: Clean Notches

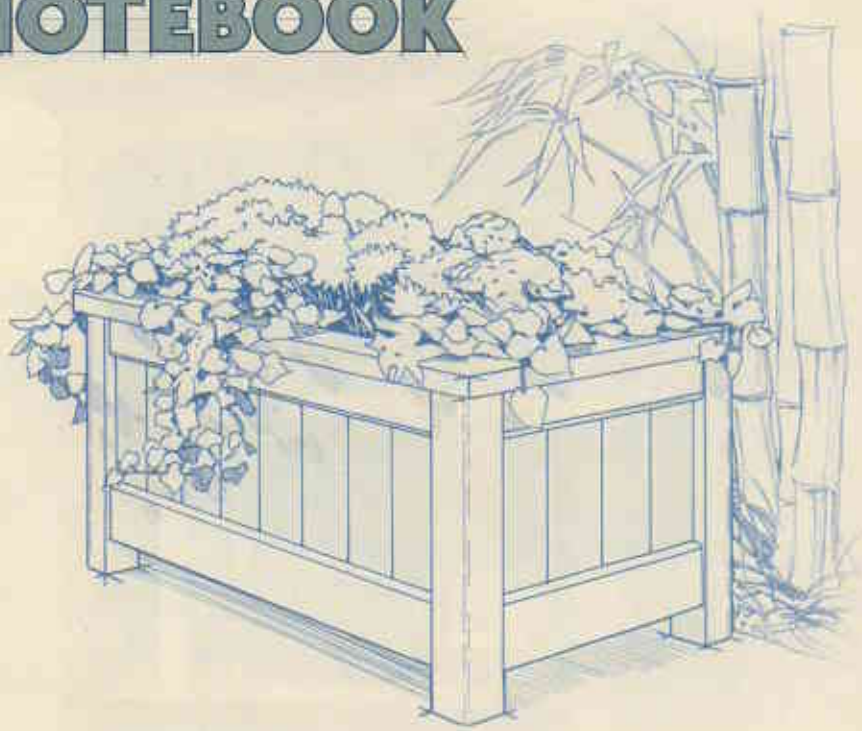


Make Vertical Cut First. *After adding a tall auxiliary fence to your miter gauge, stand the slat on end and butt it against the rip fence.*



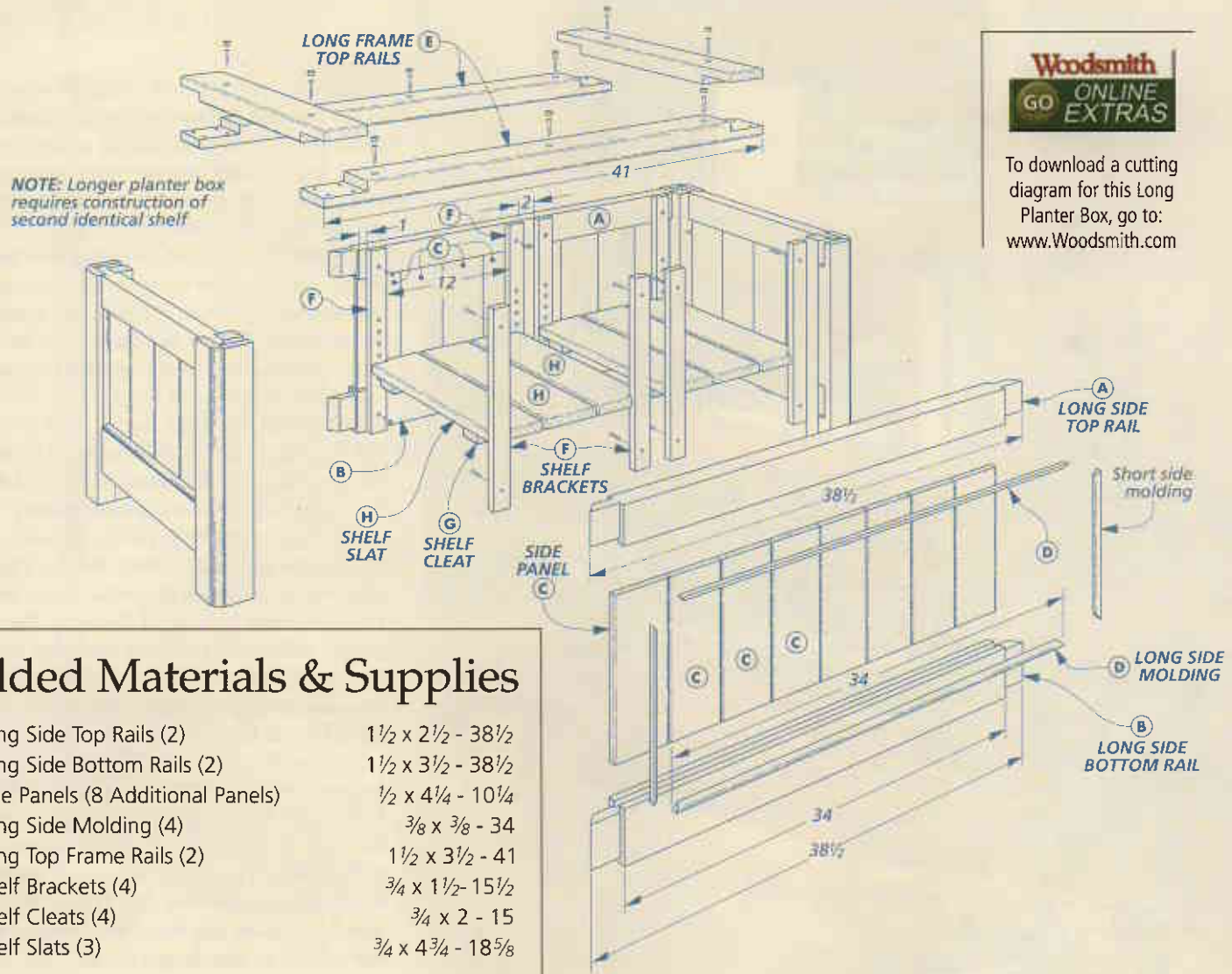
Horizontal Notch Cut. *After adjusting the blade height and rip fence position, turn the slat on edge and make the cut.*

A Longer Box



To make a longer planter box, all you'll need to do is extend the length of the rails and top frame a bit. Then cut a few extra side panels. It's assembled the same way as the smaller planter box. The drawing below will help you with the dimensions and assembly details for building the longer planter box.

Since the planter is twice as long, you'll also need to double the adjustable shelf space. To do this, simply build two shelves just like the one in the smaller planter box.

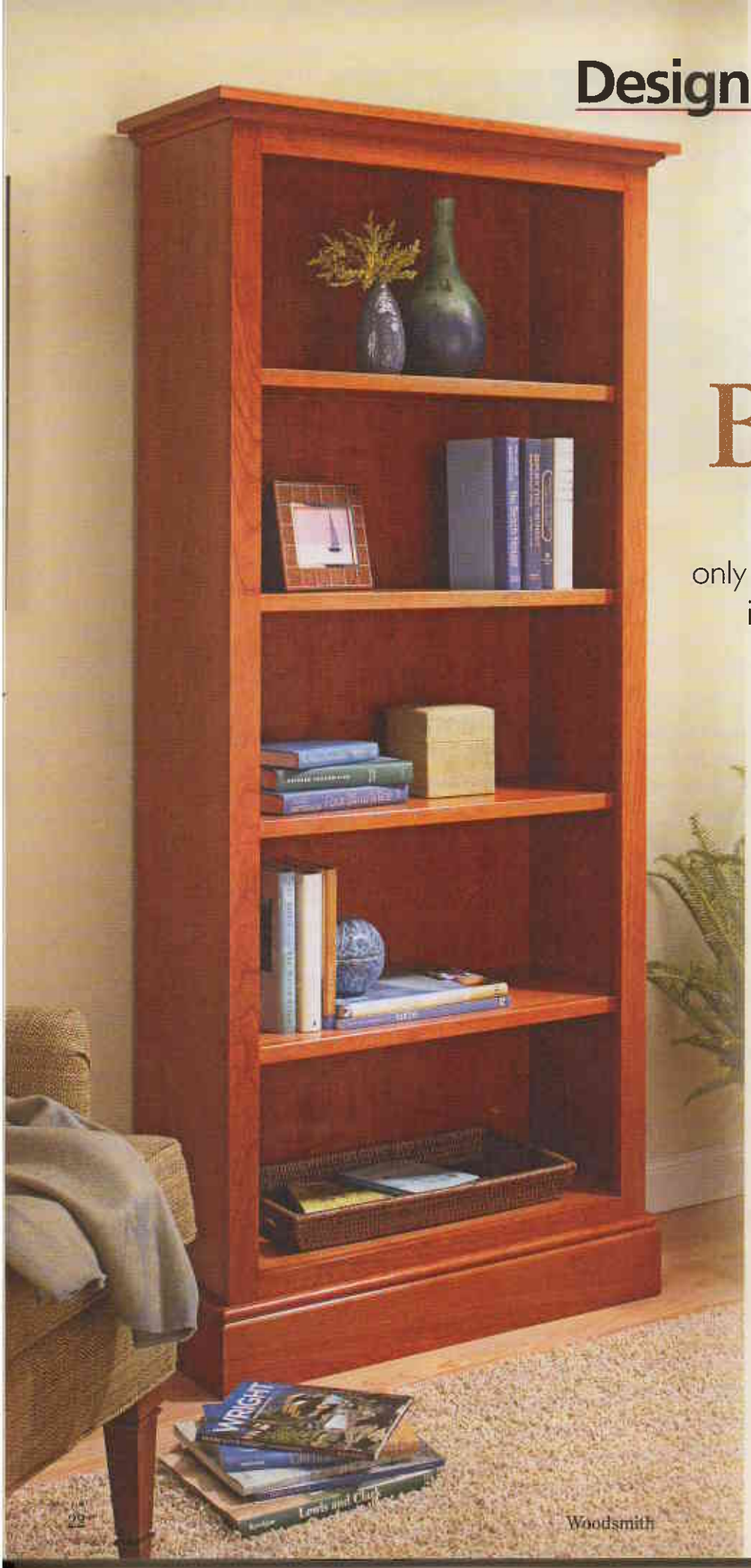


Woodsmith GO ONLINE EXTRAS

To download a cutting diagram for this Long Planter Box, go to: www.Woodsmith.com

Added Materials & Supplies

A	Long Side Top Rails (2)	1½ x 2½ - 38½
B	Long Side Bottom Rails (2)	1½ x 3½ - 38½
C	Side Panels (8 Additional Panels)	½ x 4¼ - 10¼
D	Long Side Molding (4)	⅜ x ⅜ - 34
E	Long Top Frame Rails (2)	1½ x 3½ - 41
F	Shelf Brackets (4)	¾ x 1½- 15½
G	Shelf Cleats (4)	¾ x 2 - 15
H	Shelf Slats (3)	¾ x 4¾ - 18⅝



classic Bookcase

Sure, it looks great. But that's only part of the story. This project is also versatile, easy-to-build, and solid as a rock.

It only takes a quick look at the photo at left to see that this classic-looking bookcase is a great way to transform some unused wall space into versatile storage. But it's not until you get into all the construction detail that you get the full picture.

ONE SHEET. For starters, the trip to the lumberyard will be easy on the wallet. The case and shelves can all be cut from one sheet of ¾" plywood. Throw in a few board feet of hardwood lumber and a piece of ¼" plywood and you're good to go.

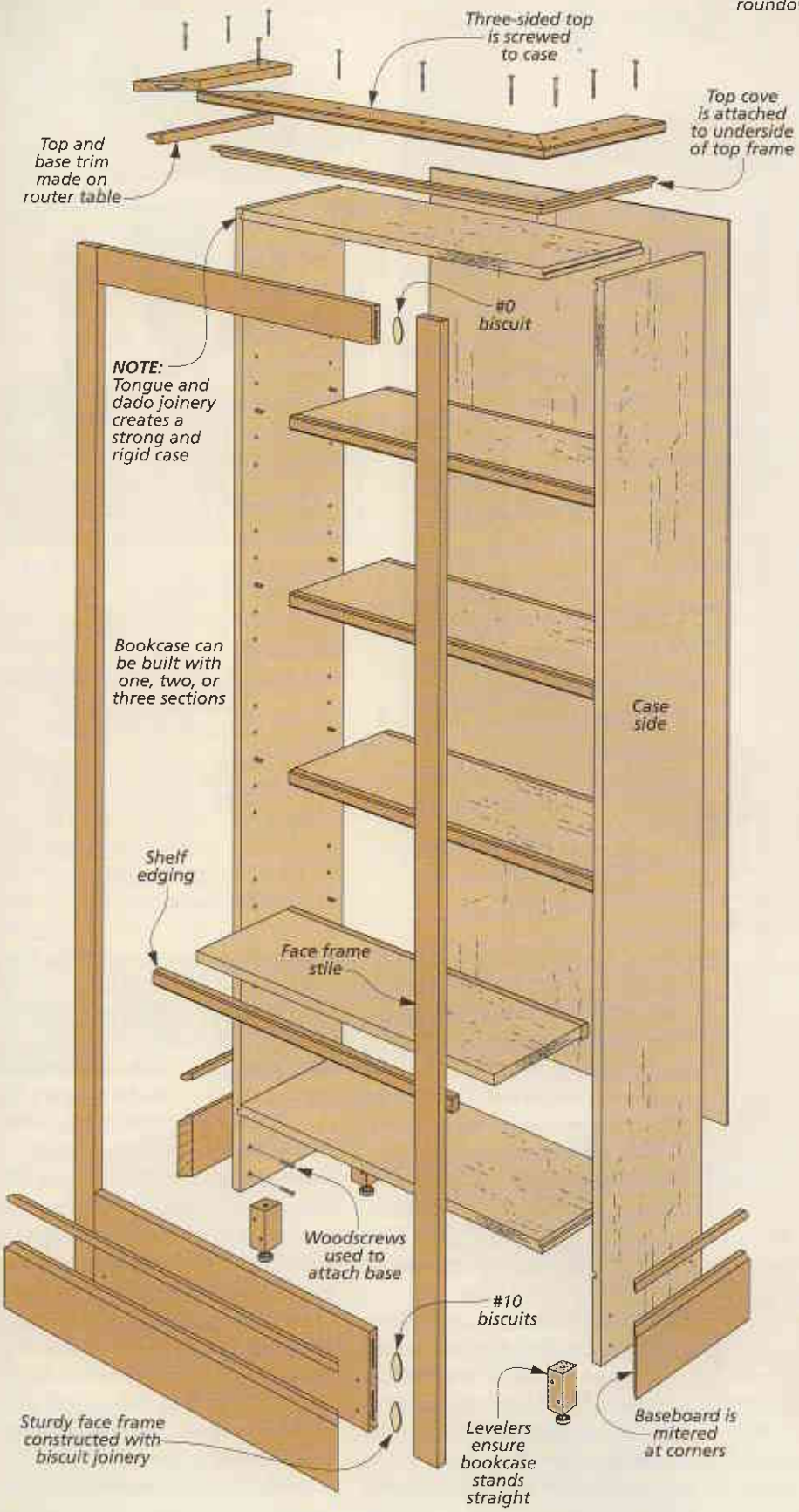
THE BASICS. Once back at the shop, things will go just as easy. This bookcase is built to stand up to about any load, and all it takes to accomplish this is some basic joinery.

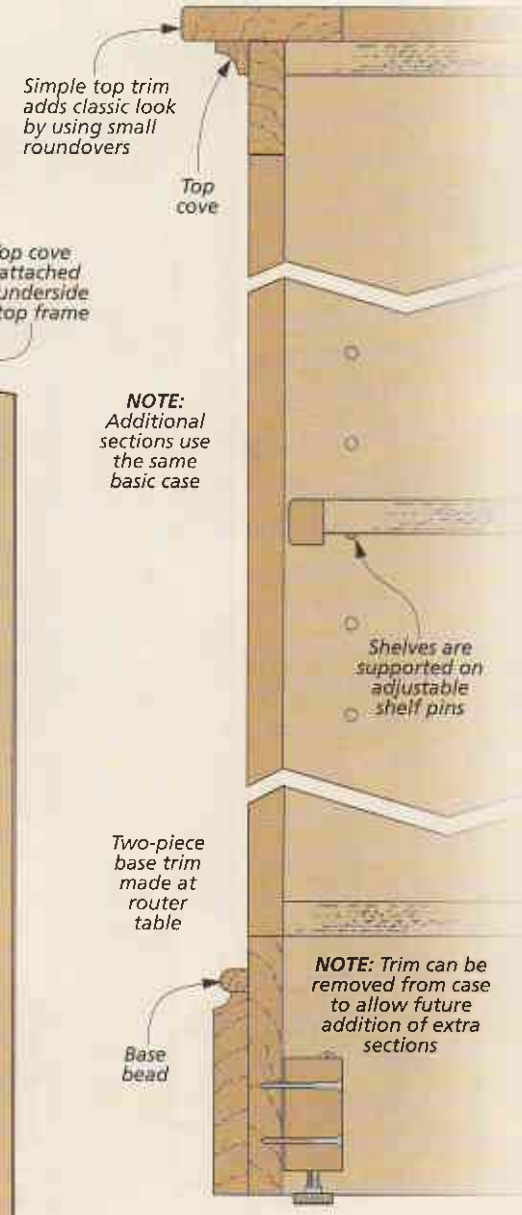
The case is built with sturdy, but easy-to-cut, tongue and dado joinery. So you'll have this part of the project together in no time. The face frame is more of the same. Biscuit joinery makes the job quick and easy without sacrificing any strength. Then, when you add some shop-made trim to the case, the bookcase takes on a whole new look.

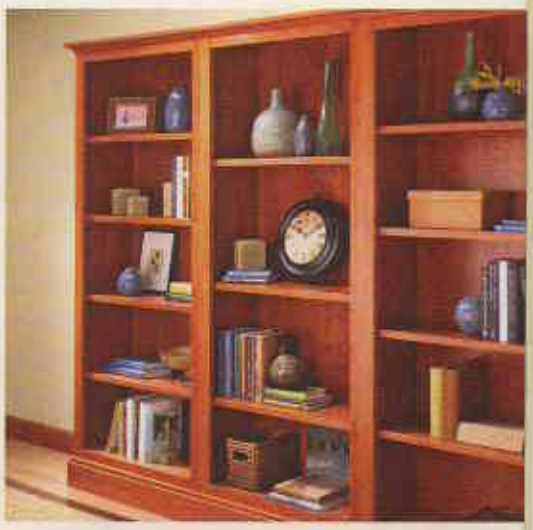
But, believe it or not, there's one more feature that makes this project even better. And that's how easy it is to expand the bookcase to fill an entire wall, as shown on the following page. All you have do is build multiple cases, modify the trim a bit, and then fasten them together. So you might say this project is "one design fits all."

CONSTRUCTION DETAILS

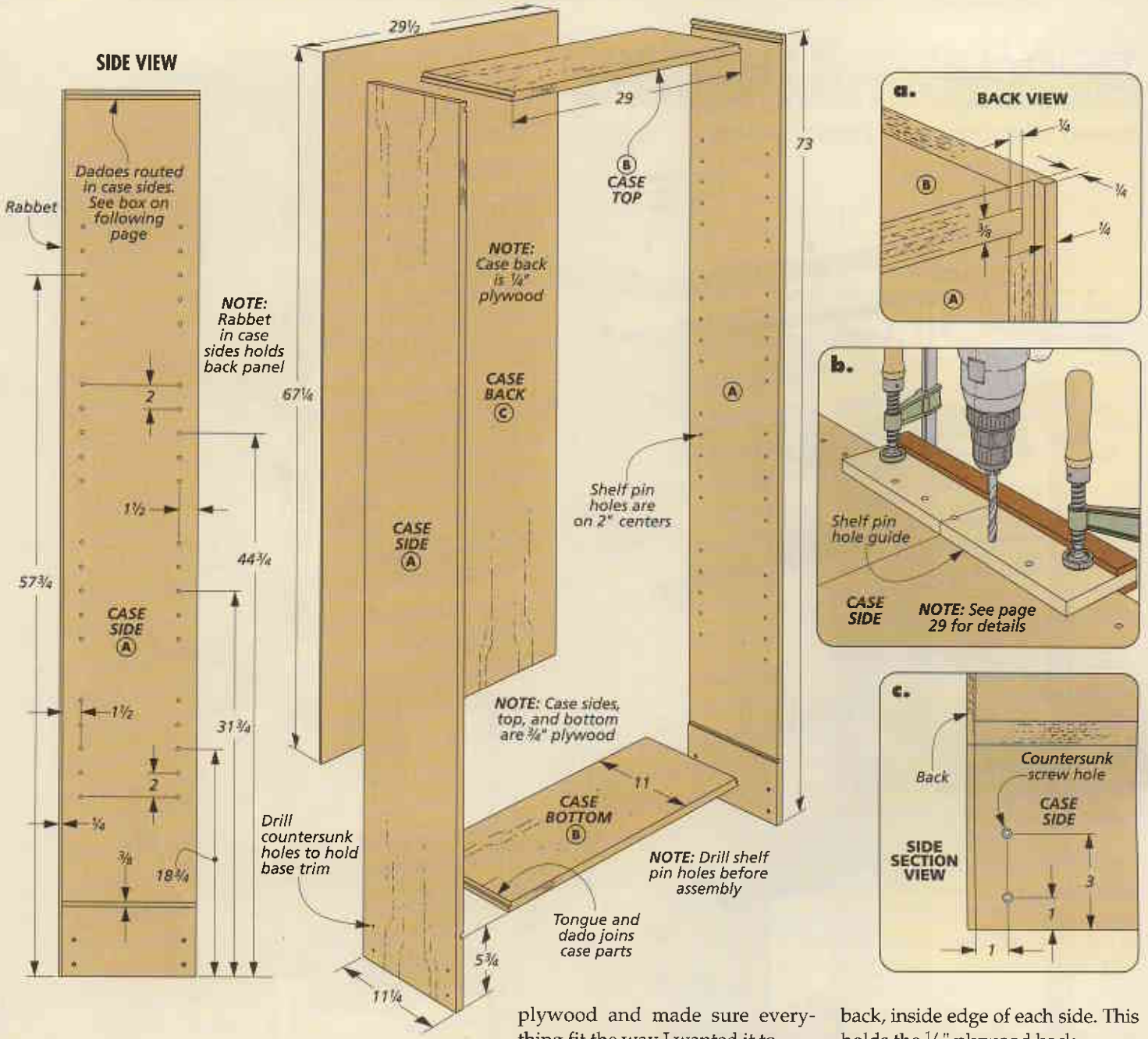
OVERALL DIMENSIONS: 33"W x 13½"D x 73¾"H







If you like the looks of this project, why not expand it to cover an entire wall? Separately built sections make it easy.



building the CASE

My first goal here was to put together a solidly built plywood case. If you just take a look at the drawing above, you'll have a good idea of what's involved.

LAYOUT. As I said before, the bookcase is designed so that the main case parts and shelves can all be cut from one sheet of ¾" plywood. So before I started cutting, I took a minute to lay out the parts on my plywood and made sure everything fit the way I wanted it to.

THE SIDES. The major part of the work on the case involves making the two plywood sides. So once I completed the layout, I started by cutting the two *case sides (A)* to size.

Now you can start on the joinery. As you can see in detail 'a,' the case sides are joined to the top and bottom with a tongue and dado. This joint gives you good gluing surface *and* "racking" resistance.

Cutting the dadoes in the long case sides on the table saw would be pretty awkward. So the solution is to use a hand-held router and a simple edge guide, as shown in the box on the opposite page.

With this task complete, the next step is to cut a rabbet along the back, inside edge of each side. This holds the ¼" plywood back.

And to complete work on the sides, you'll need to drill some shelf pin holes. To do this quickly and accurately, I used a simple plywood drilling jig (detail 'b'). You'll find more about this on page 29.

TOP AND BOTTOM. That's it for the sides. Next up are the identical case top and bottom and there are just a couple things to mention here. First, since the back panel simply laps over the top and bottom, they're sized ¼" narrower than the sides. And then a dado blade on the table saw will take care of cutting the tongues on the ends of the top and bottom (detail 'a').

At this point, I got out the glue bottle and a few clamps and

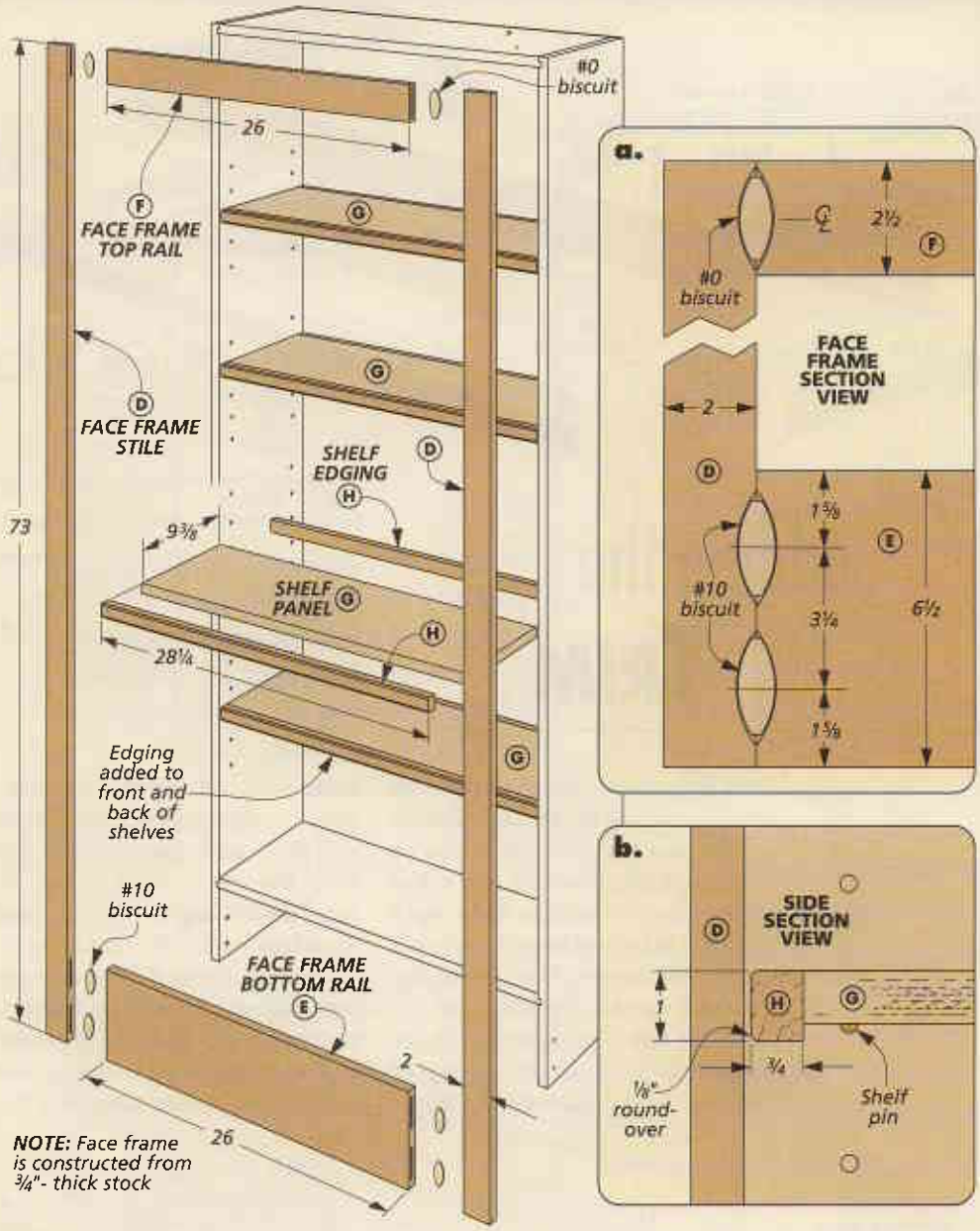
assembled the case. And then once the clamps come off, you'll want to cut the plywood back panel to size and glue it in place. This will help keep the case square and rigid while you add the face frame.

FACE FRAME. The face frame does more than just hide the plywood edges. It provides one more way to strengthen the case. So to make sure the face frame I added was up to the task, I did a couple things.

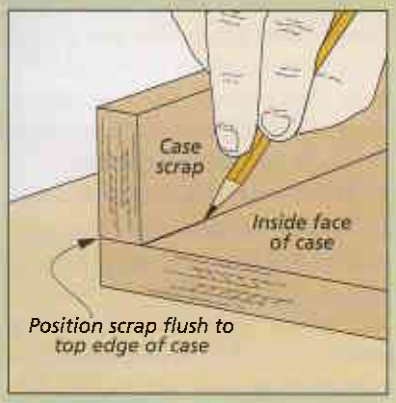
First, for added strength, I made the parts of the face frame pretty substantial — 2"-wide stiles, a 2½"-wide top rail, and a 6½"-wide bottom rail. And second, as you can see in detail 'a,' I got out my biscuit joiner to handle all the joinery. It makes the work go quickly and the face frame plenty rigid.

You'll have plenty of room for two #10 biscuits between the bottom rail and the stiles. But smaller #0 biscuits are a better fit in the top rail, as you can see in detail 'a.' Once the biscuit slots are cut, the face frame can be assembled and glued in place on the case.

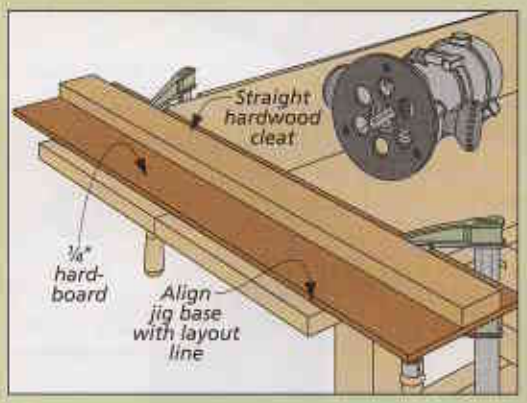
FOUR SHELVES. I had two goals in mind when I made the plywood shelves. I wanted them to look pretty stout and to be "sag proof." I accomplished this by reinforcing both the front and back of the shelf panels with a sturdy, 1"-wide piece of edging (detail 'b').



How-To: Routing Dadoes

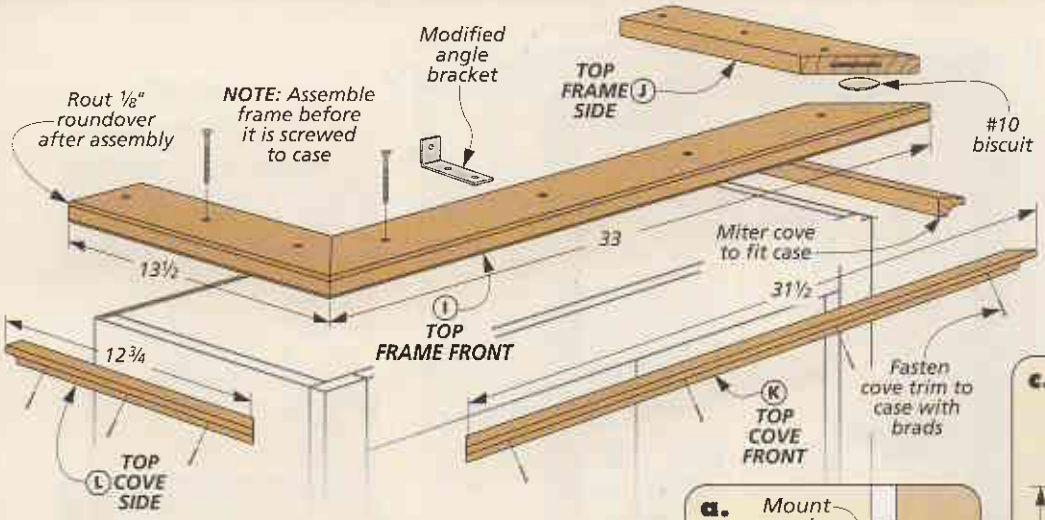


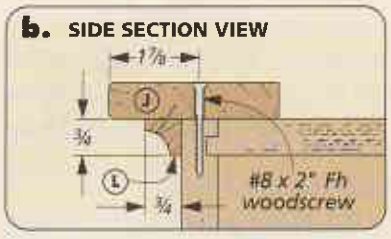
Layout. *To ensure the case is flush across the top, use a scrap of plywood to lay out the dadoes in the sides.*

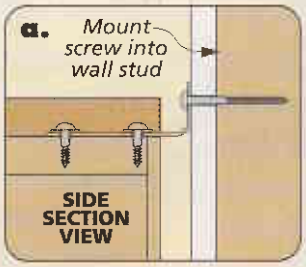


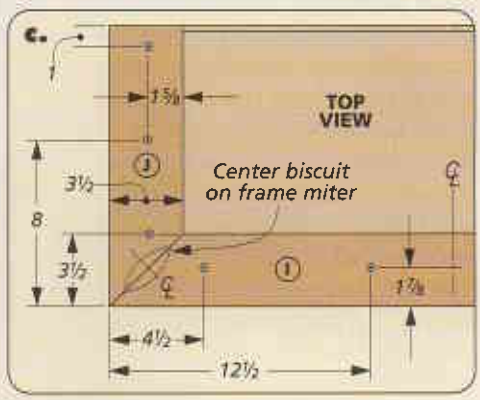
A Simple Guide. *The two case sides are lined up and clamped edge-to-edge. Then a shop-made edge guide is used to accurately rout the dadoes.*

As you can see, the hardboard base of the guide has been trimmed so that the router cut falls right along its edge.









adding the TRIM

With the case complete, you can start work on adding the trim that dresses up the top and bottom. If you're building a single section, you'll find everything you need to know right here. For side-by-side sections, you'll need to do things a little differently. So check out the opposite page.

THE TOP TRIM. The drawings above show how to finish out the top of the case. First, I assembled a three-sided mitered frame to create a wide overhang (detail 'b'). Biscuits will help with the assembly and keep the miters tight (detail 'c'). After assembling the frame, I eased the edges with a 1/8" roundover.

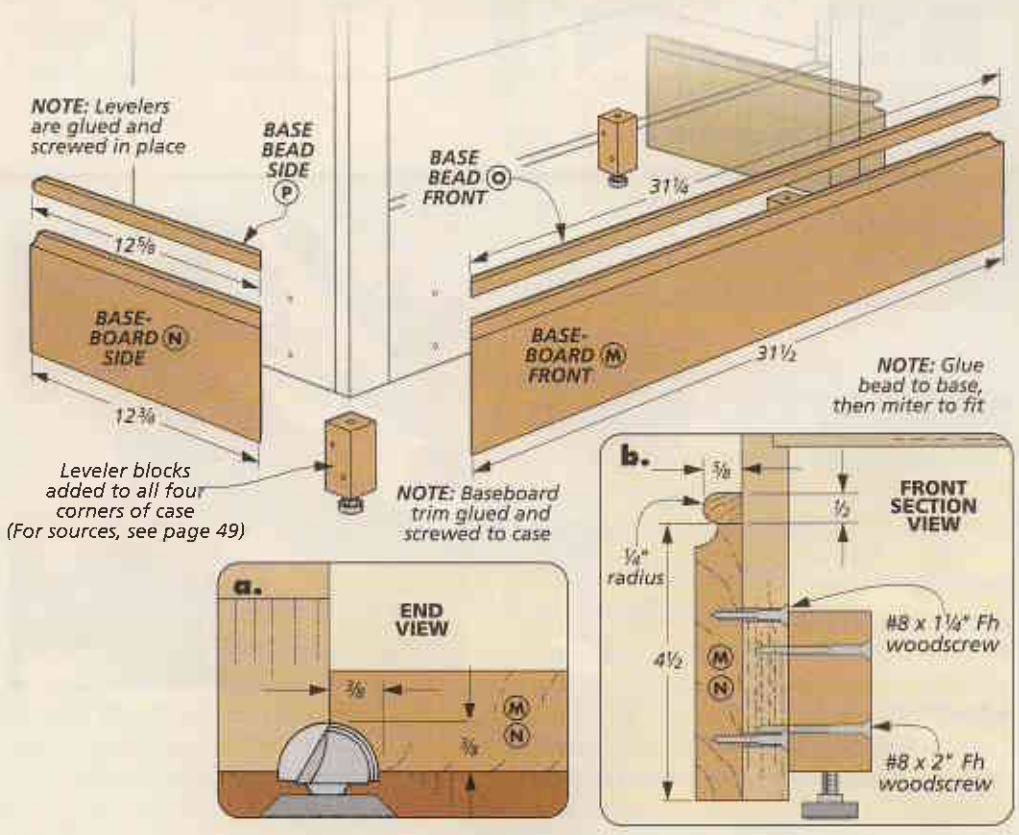
Once the frame is fastened to the case, the next job is to add the simple cove molding that fits beneath it. The cove can be made in short order at the router table and then mitered to fit. Finally, I fastened the cove to the case and frame with glue and a few brads (detail 'b').

ADD THE BASE. Next comes the wide base trim shown in the drawings below. As you can see, it's made up of two separate parts, a wide baseboard with a cove routed on the top edge and a narrow bead that "caps" the coved edge.

To make this base, you'll need to spend a little time at the router table. Detail 'a' below shows the first step. After cutting the baseboard blanks to rough length, I routed the cove along one edge. Next, comes the 1/2" bead molding. Here, you can turn to page 29 for a short lesson on making bead.

When the bead is complete, it's glued to the coved edge of the baseboard. Then the completed trim is mitered to fit around the case. Wrap things up by gluing the trim to the case and adding screws for good measure (detail 'b').

STRAIGHT AND LEVEL. The final task is to make certain the bookcase always sets level *and* upright. To do this, I first installed a leveler in each corner of the case, as shown in detail 'b.' And then after the bookcase is completed and moved into place, it's a good idea to anchor it to the wall (detail 'a' above). This will eliminate any worry of the bookcase tipping forward. W



DESIGNER'S NOTEBOOK

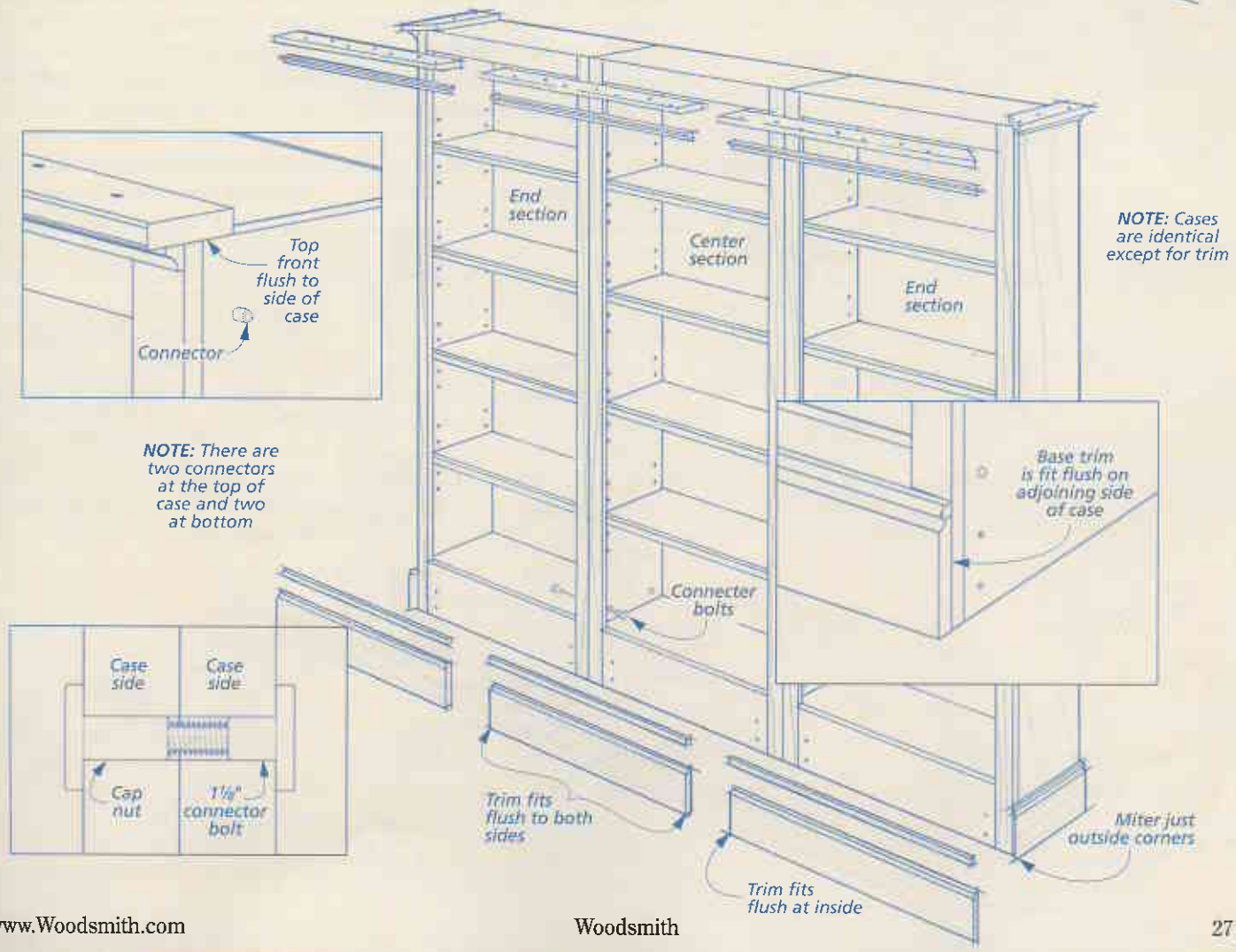
Side-by-Side Bookcase

One of the nicest features of this bookcase is that you can combine as many sections as necessary to fit your wall space. And this only takes a couple of minor design changes.

The idea is that each section is built as a complete, separate unit. Then the sections are set side by side and fastened together with connector bolts as shown in the detail drawing below.

So there are no changes to how you build the basic plywood case. But since the sections have to butt tightly together, the top and bottom trim are fit a little differently.

For an end section, you'll miter the trim at the outside, but fit it flush with the case side on the inside. (see drawings below). To make a center section, fit the front trim flush to both sides of the case.



SHOP NOTEBOOK

Router Table Spline Jig

I used hardwood splines to reinforce all the mitered corners of the jewelry chest project on page 30. Normally, cutting the slots for the splines is a quick job at the table saw. But here I thought a narrower slot and thinner spline (3/32") would look much better on the 1/2"-thick case parts. And this meant I needed to come up with another way to do the job. The answer was a slot cutter bit and the router table jig you see in the photo at right.

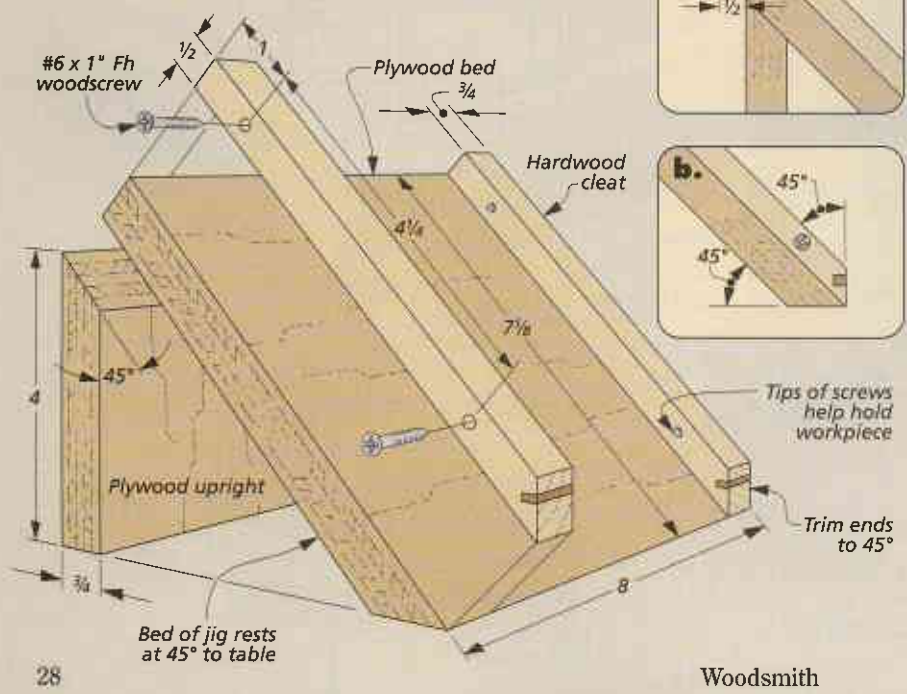
The jig supports the workpiece at 45° to the router table top. This allows you to use a 3/32"-wide slot cutter to rout a clean slot perpendicular to the face of the miter.

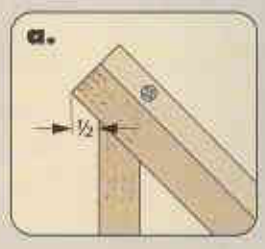
BUILD IT. A look at the drawings below will provide all the construction details you need. The two cleats that run along either side of the angled bed are what you'll use to hold the workpiece in place. The narrower workpieces are clamped directly to the rear cleat, as shown in Figure 1. To hold wide case pieces in place, I inserted screws through the cleats. The tips of the screws bite into the workpiece just enough to keep it from sliding but not enough to leave marks.

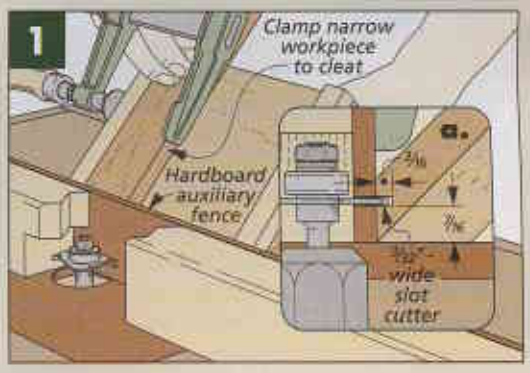
USE IT. Figures 1 and 2 show how the jig is put to use. But first, I did a little bit of preliminary setup.

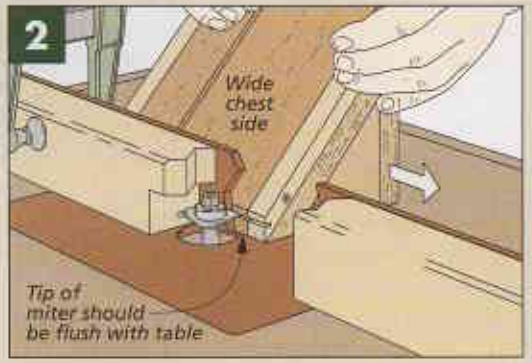
Rather than risk having the jig tip into or catch on the large opening in the router table fence, I clamped a hardboard auxiliary fence in place. Then you can simply adjust the slot cutter to the correct height and run it out through the hardboard to the correct depth. This gives the jig and workpiece a smooth surface to ride against.

Once you're set up, the rest is easy. Just make sure the workpiece sits in the jig with the tip of the miter even with the surface of the table. Then steadily feed the jig and workpiece across the bit.







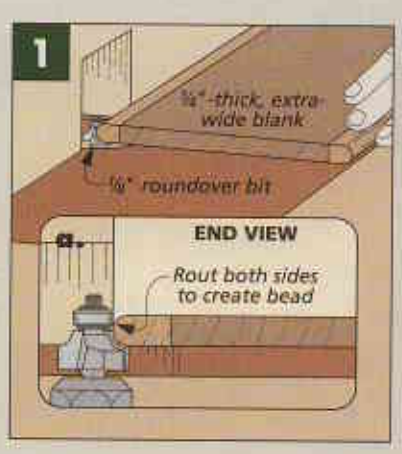


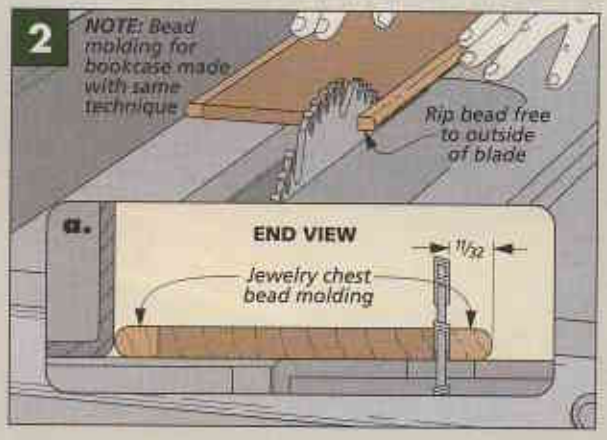
Shaping Bead Molding

I used one of my favorite moldings, a simple bead, to add a classic touch to both the bookcase project on page 22 and the jewelry chest from page 30. Shaping the bead takes place at the router table using a roundover bit. The challenge here is the small size of the finished pieces. But there's a pretty easy way to get around this.

As you can see in Figure 1, the bead starts out as an extra-wide blank. This gives you plenty of material to hold on to as you work.

For the ¼" bead, you'll use an ⅛" roundover bit (Figure 1). To get a fully rounded bead, set the depth carefully so that after a pass on each side of the blank, the roundovers will meet right in the middle of the blank. As you see in Figure 1a, the fence needs to be set on the money as well, since the bearing won't support the workpiece on the second pass.





After routing a bead on both edges of the blank, I take it to the table saw to complete the job. Just set the rip fence so that you can safely rip each bead free from the blank, as shown in Figure 2.

Shelf-Pin Hole Jig

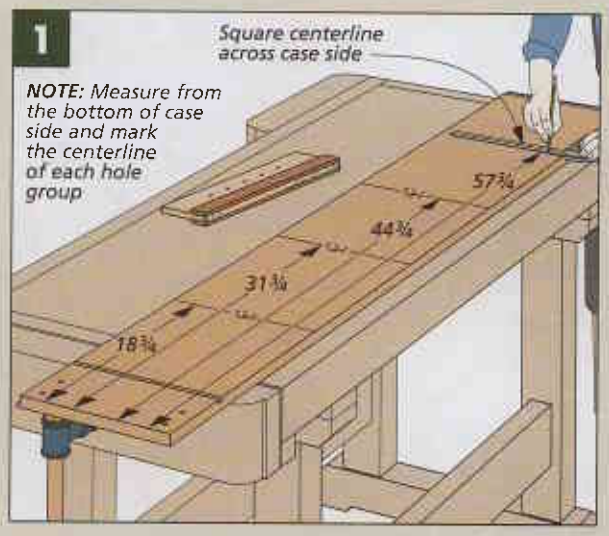
It's pretty disappointing when you set a shelf in place only to find that you didn't drill the holes for the support pins accurately. A shelf that rocks from corner to corner or doesn't sit level wasn't in the plan. So when building the bookcase on page 22, I didn't leave this to chance. A simple jig made the job quick, easy, and foolproof.

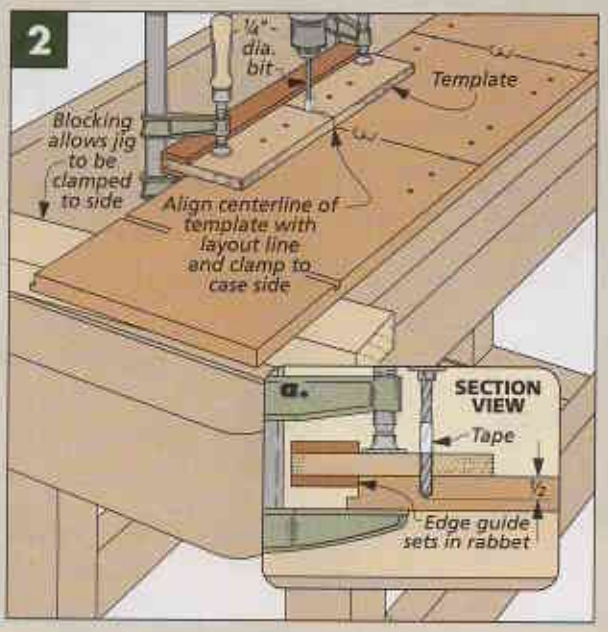
The holes are in groups of five on 2" centers. So to space the holes accurately and keep them in a straight line, I started by making a drilling template out of plywood as shown in the drawing below.

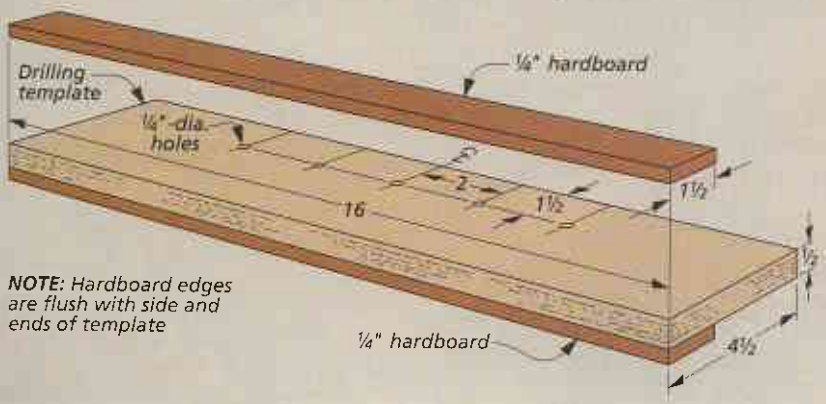
Next, you need a way to space the holes 1½" from the front edge and the rabbeted back edge of the case sides. To do this job, I attached a thin hardboard cleat to either side of the template. The two thin cleats will fit over the rabbet cut in the sides for the back panel. And with a cleat on either side, the jig can simply be flipped over to drill the holes on the opposite edge. By using the same template hole to drill both the front and back, you'll ensure the holes will line up.

Finally, you need a way to accurately locate the jig on the case sides. To do this, first I squared a pencil line through the center template hole out to and across the edge of the template. This reference line can be matched up with layout lines on the case sides marking the location of the center hole in each group as in Figure 1.

Once the layout is complete, Figure 2 shows how to complete the job. Butt the guide up to the edge of the side and align it with your layout line. Clamp it in place and drill your holes. Then flip the jig over to repeat the process on the opposite edge. W







Jewelry Chest

Finely crafted details and a bookmatched veneer top make this chest a real gem.

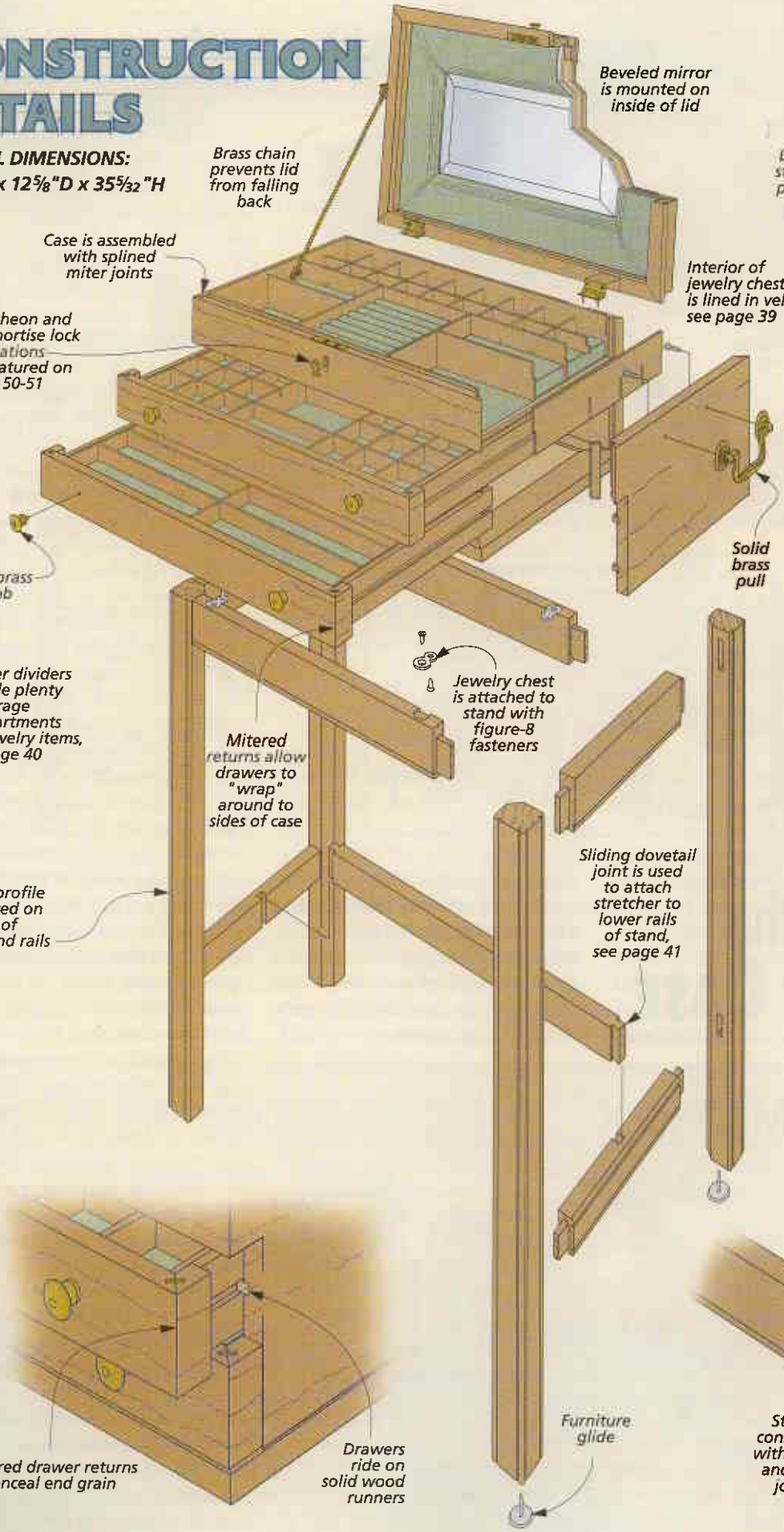
When you first look at this jewelry chest, it's hard to know where to focus your attention. The elegant, veneered lid opens to reveal a beveled mirror and a divided "tray." Below this are a couple of mitered-front drawers with more intricately divided compartments. And to top it all off, the chest rests on a graceful stand. (It can also sit on a dresser.)

But more important than all the visual details is the amount of detail that goes into building the chest. Even though it's a relatively small project, I think you'll learn some interesting techniques while building it.

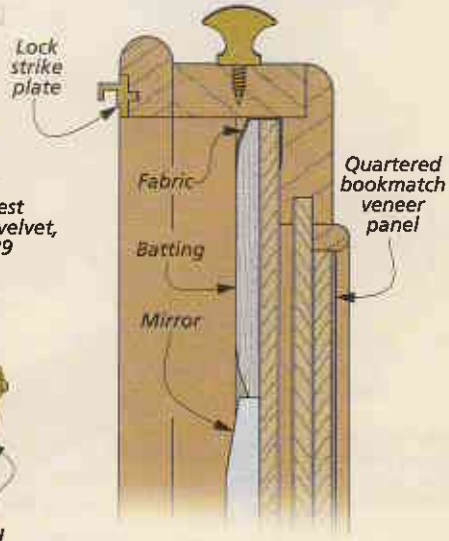
The interior of the jewelry chest is divided into dozens of velvet-lined compartments to help keep jewelry separated. And a beveled mirror is mounted inside the lid.

CONSTRUCTION DETAILS

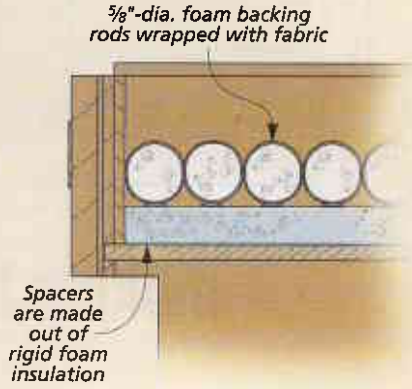
OVERALL DIMENSIONS:
18⅝"W x 12⅝"D x 35⁵⁄₃₂"H

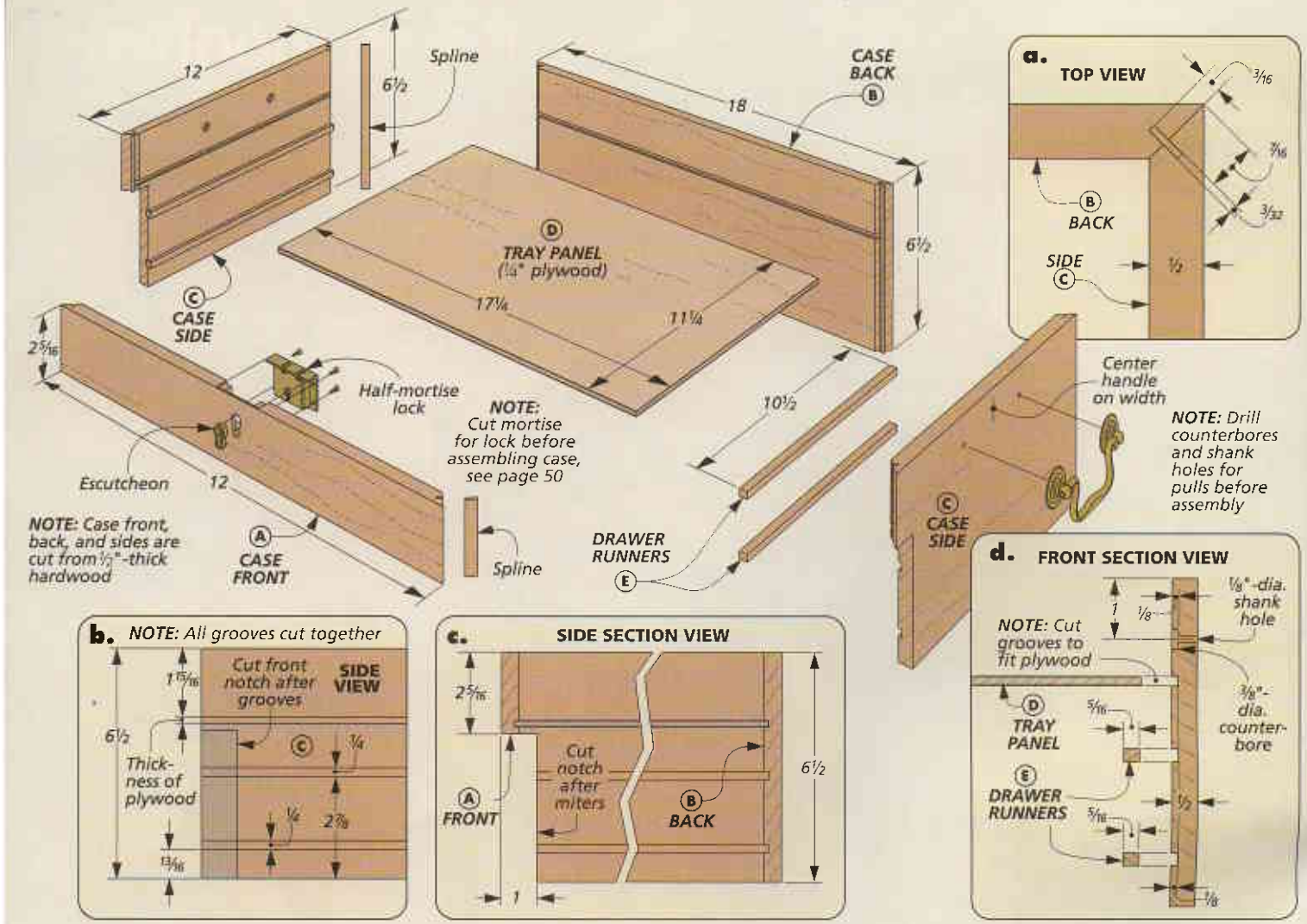


SIDE SECTION VIEW (LID)



SIDE SECTION VIEW (TOP TRAY)





making the CASE

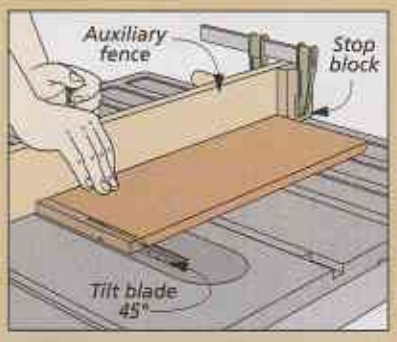
When it came to building the jewelry chest, I started with the case. And the reason for this is simple. Every other part of the chest — the lid, the drawers, and even the stand — are sized to fit the case. So it was only natural to begin there.

If you take a look at the drawing above, you'll see that there's not much to the case. Basically, it's just four pieces that are connected with splined miter joints. A plywood panel divides the case into upper and lower sections.

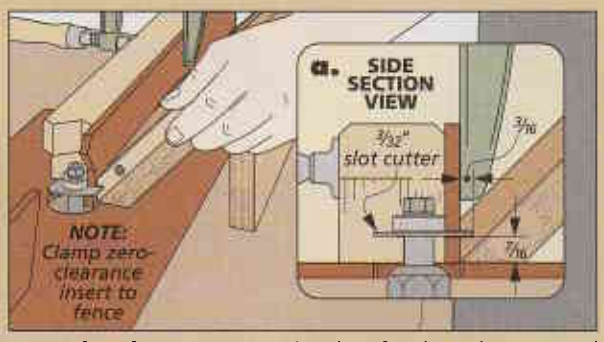
But what's unusual about this case is the opening for the drawers. Notches in the case sides actually allow the opening to extend back past the front of the case. This creates room for the drawer fronts to "wrap-around" to the sides. (You'll see what I'm talking about when we get to the drawers.)

For now, you can start by cutting out the case front, back, and sides. Cut these pieces to exact width, but don't cut them to length just yet. First, you'll want to cut grooves for the plywood tray bottom and the drawer runners as shown in detail 'b.' Once this is done, you can miter the pieces to length, as shown in the box at left.

How To: Splined Miter Joint



Miter the Ends. *Using an auxiliary fence and a stop block on your miter gauge, miter the ends of the case front, back, and sides to length.*



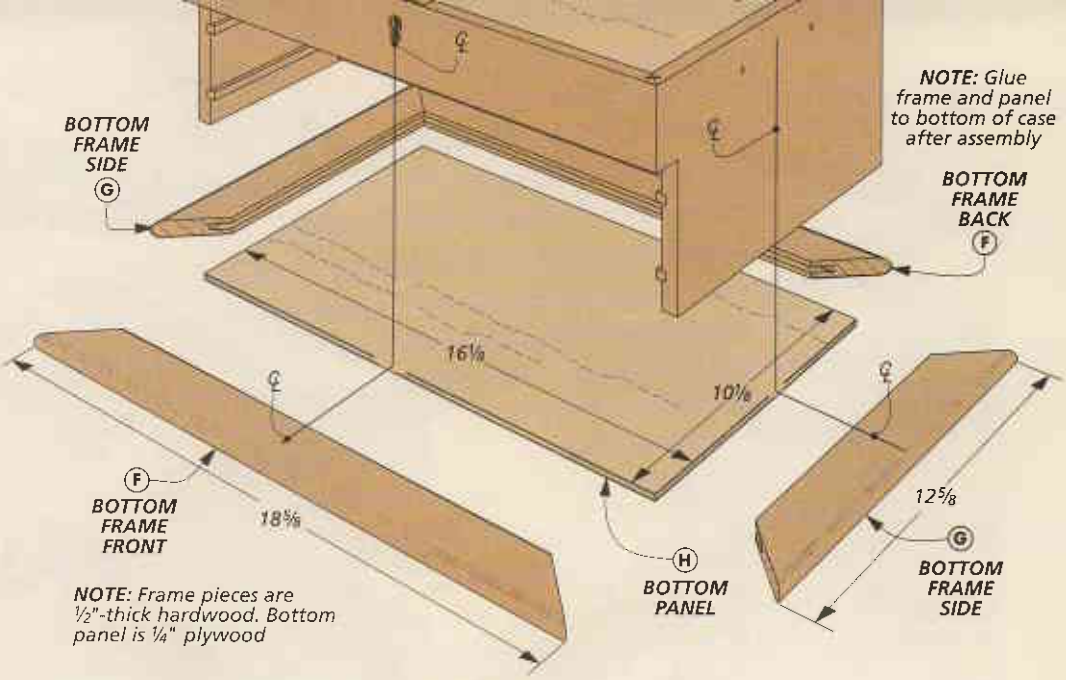
Rout the Slots. *To create the slots for the splines, I used a slot cutter bit. A simple sled backs up the workpiece and holds it at the proper 45° angle while cutting the slot. (See page 28 for more on making the sled.)*

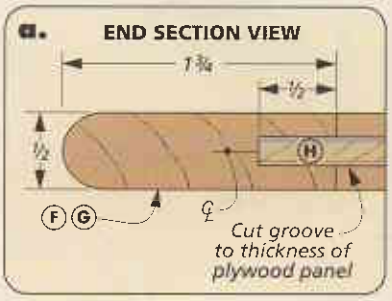
SPLINED MITERS. If you take a look at detail 'a' on the opposite page, you'll see that the miter joints are strengthened with splines. To cut the 3/32"-wide slots for the splines, I used a slot cutter bit on the router table. And to hold the workpieces at the proper angle while cutting the slots, I made a simple jig. (See page 28 for more on this.)

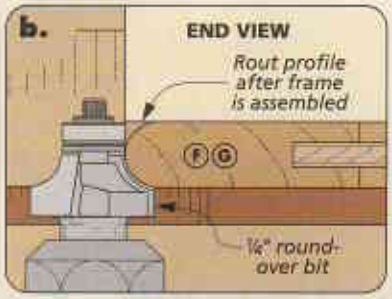
After the slots are cut, the next step is to cut the notches in the two side pieces for the drawer fronts. These notches are too long to cut on the table saw with the workpiece standing on edge. So I had to cut them in two stages, first using a table saw and then a hand saw to complete the cut (see box below).

HARDWARE. I found it easier to do all the drilling and mortising for the hardware at this stage, before the case is assembled. Drilling the counterbored holes in the sides for the brass bail pulls that are added later is a pretty simple matter. But installing the half mortise lock and key escutcheon is a little more complicated. So you'll want to take a look at the article on page 50.

TRAY & SPLINES. Before assembling the case, there are a couple of details to take care of. First, you'll need to make some hardwood splines for the miter joints to fit in the slots you routed earlier. Second, you'll need to cut a tray bottom out of some 1/4" plywood to fit in between the case front, back, and sides.





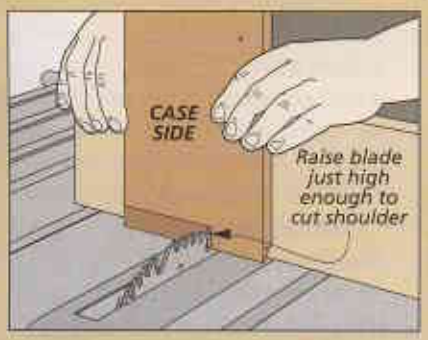


DRAWER RUNNERS. After the case is assembled, you can cut some hardwood drawer runners to fit in the grooves in the sides of the case. These are simply glued in place.

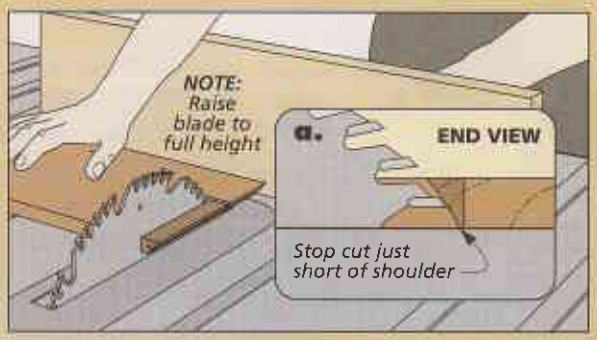
CASE BOTTOM. Before moving on to making the lid, I added a bottom to the case. There's not much to this. It's nothing more than a plywood panel surrounded by a mitered frame. The edges of the frame pieces are rounded over, as shown in the drawings above.

The frame is simply glued up around the panel. Then in order to get a good fit between the case and bottom, I sanded the bottom edge of the case by placing some self-adhesive sandpaper down on the flat surface of my workbench. Finally, the whole assembly is glued to the bottom of the case.

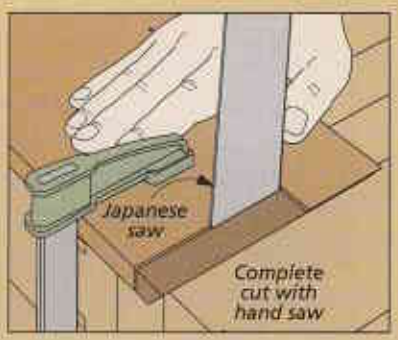
How To: Cut a Stopped Notch



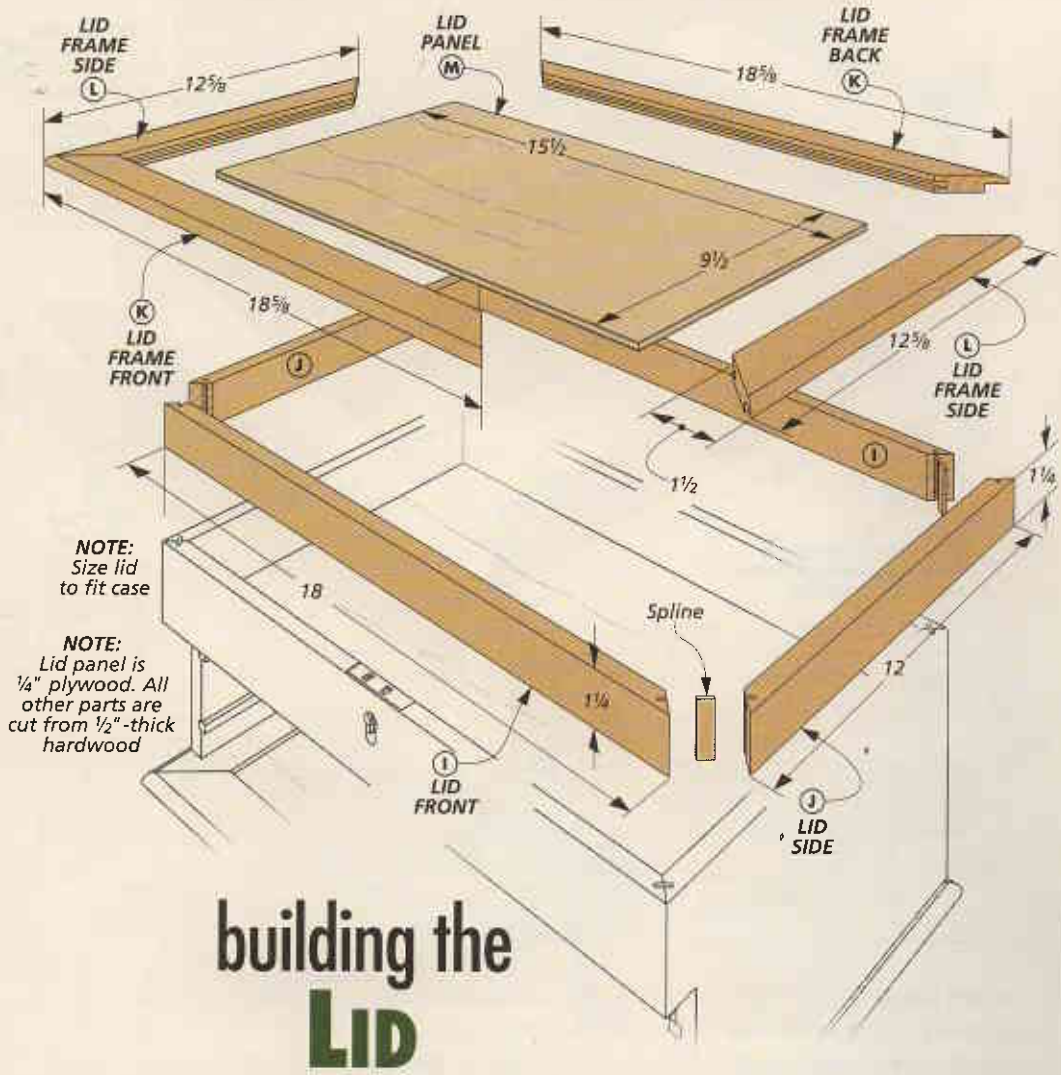
Cut the Shoulder. *Raise the blade just high enough to establish the shoulder of the notch. An auxiliary fence attached to the miter gauge backs up the cut.*



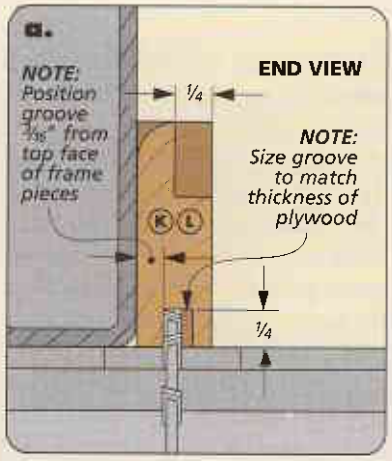
Make Stopped Cut. *With the workpiece lying flat on the table saw, push the miter gauge forward, stopping just short of the shoulder cut. (It helps to raise the blade to full height before making this cut.)*

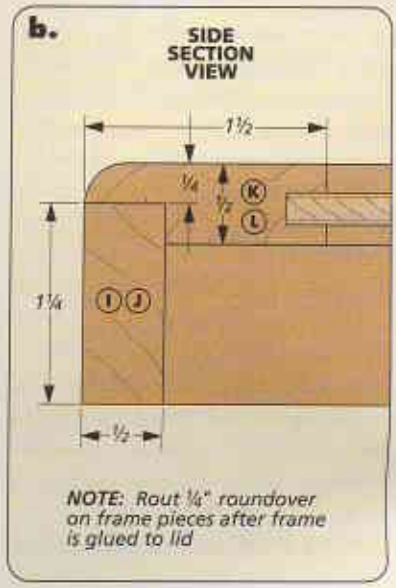


Finish the Cut. *Now you can complete the cut with a hand saw. You may have to clean up the inside corner of the notch with a chisel.*



building the LID





With the case completed, you can turn your attention to the lid. The lid of the jewelry chest is built up in "layers." You start off by building the framework of the lid. Then later you'll add a veneered panel and some molding to finish it off.

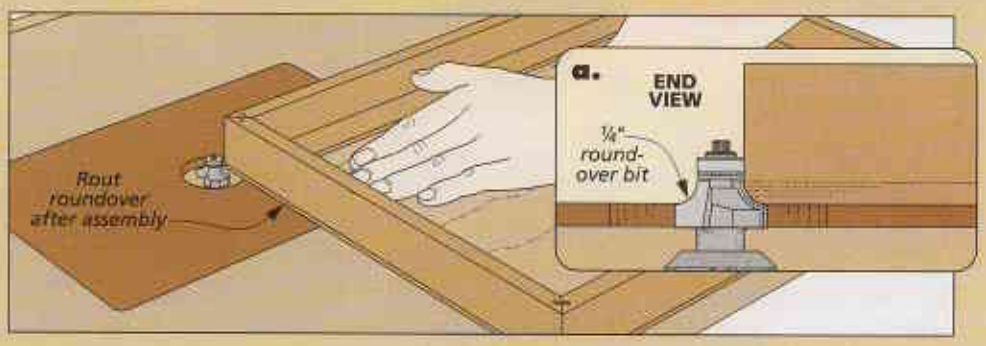
LID. If you take a look at the drawing above, you'll see that the construction of the lid is very similar to the case. It's just a front, back, and two sides joined with splined miters. These pieces are sized to match the case below it.

FRAME & PANEL. After gluing up the lid pieces, you can make a frame and panel assembly to enclose the top. This is just a mitered hardwood frame with a 1/4" plywood panel. The outer edges of the frame pieces are rabbeted to fit over the sides of the lid. And the inside edges are grooved to hold the panel (detail 'a').

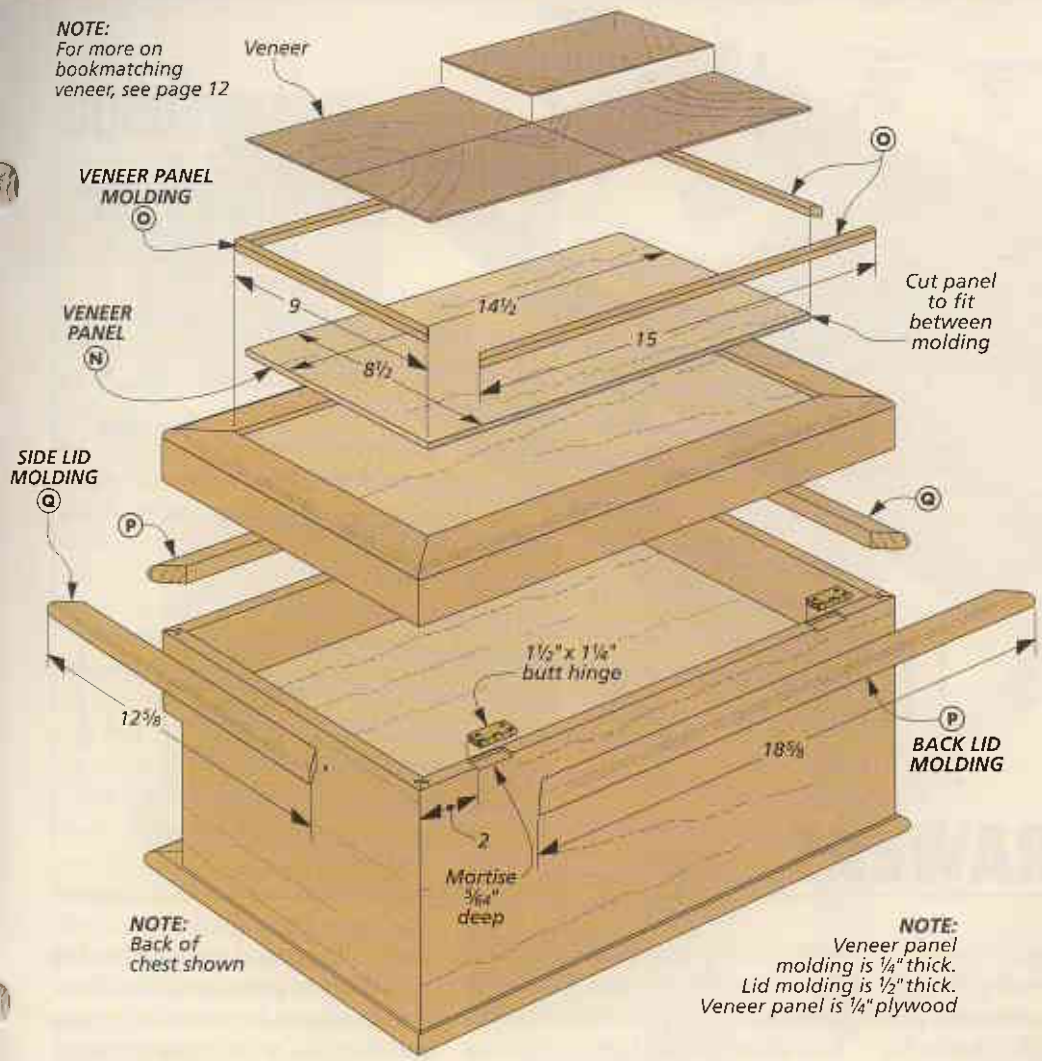
There's one thing to point out about this groove. If you take a look at detail 'b,' you'll notice that it isn't centered on the thickness of the frame pieces. This is to create a recess deep enough for the veneered panel that's added later.

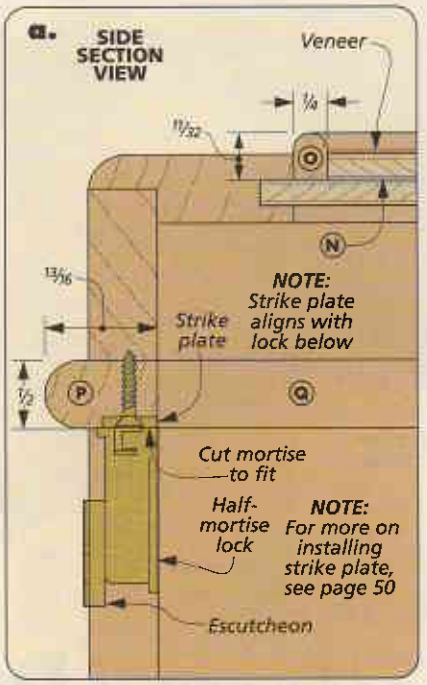
You'll also notice that there's a roundover on the outer edge of the frame. I waited to rout this until after the frame and panel were glued up and added to the rest of the lid (see How-To box at left). Once this is done, you're ready to start on the veneered panel.

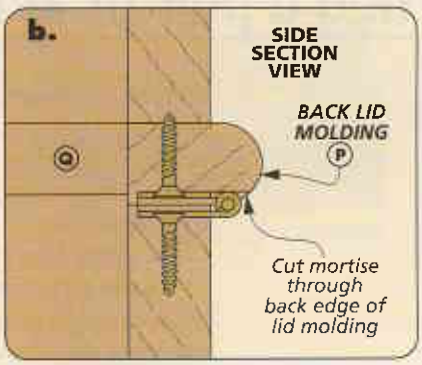
How-To: Round Over the Lid



Round Over the Lid. *After assembling the lid frame and gluing it to the top of the lid, rout a 1/4" roundover along to top edge of the frame. This way you are assured that the rounded edges of the frame will end up flush with the faces of the lid.*







adding the PANEL & MOLDING

The bookmatched veneer panel on top of the lid is definitely one of the focal points of the entire project. Although veneering the panel takes a little skill (see the article on page 12), adding the panel to the lid is pretty straightforward. As you can see in the drawing above and in detail 'a,' the veneer panel sits in the recess in the top of the lid and is surrounded by a small bead molding.

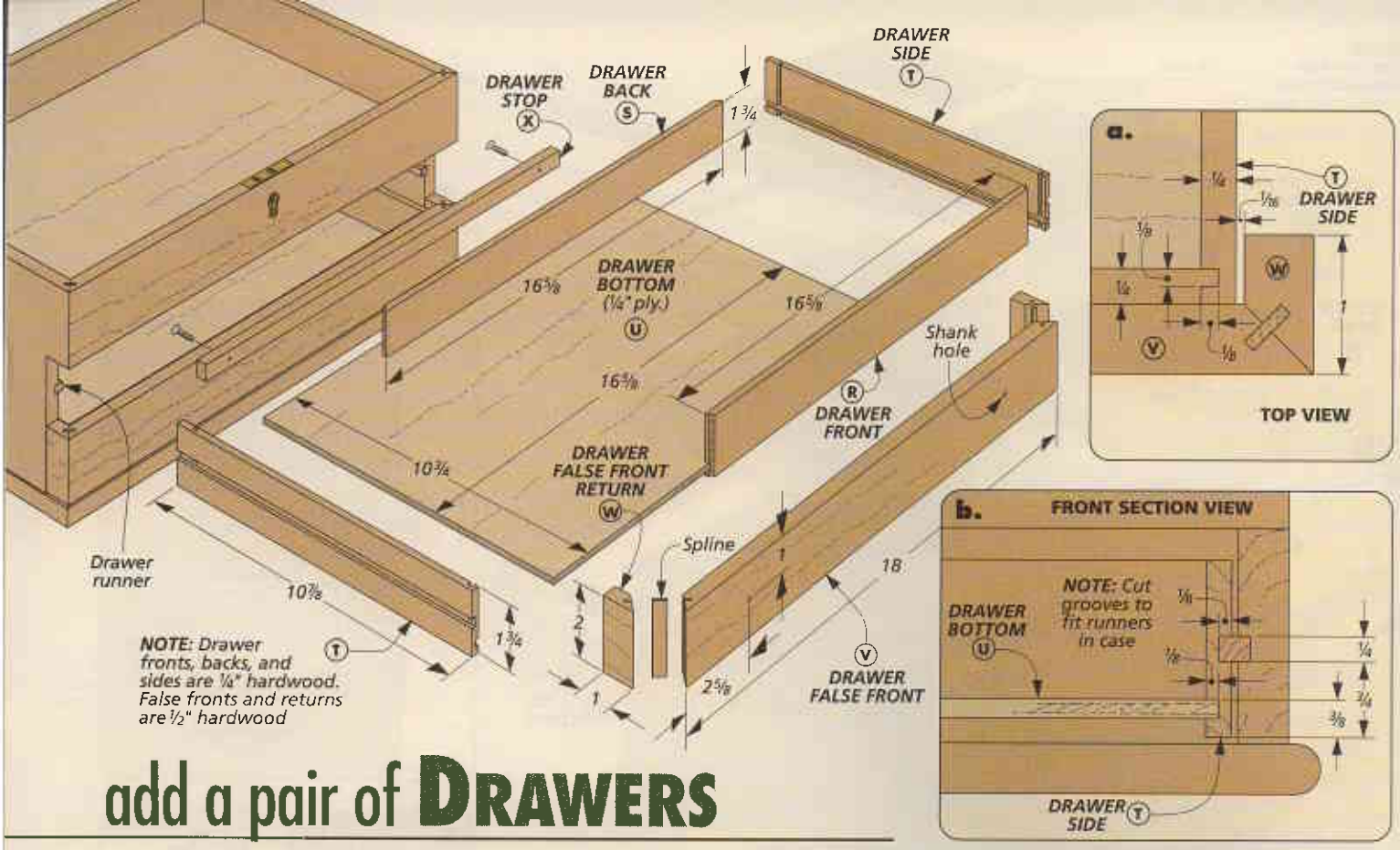
VENEER PANEL MOLDING. Before cutting the veneer panel to final size, I made some bead molding to go all around it (see page 29 for more on this). This molding is mitered to fit around the inside of the recess of the lid. Then the veneer panel is cut to size to fit inside the molding. Just make sure that when you're cutting the panel to length and width that you trim equal amounts from the ends and sides so the quartered bookmatched pattern remains centered on the panel. Once this is done, you can glue the panel and molding in place in the center of the lid (detail 'a').

LID MOLDING. The last step to complete the lid is to add some molding around the bottom edge, like you see in the drawing above and in detail 'b.' This molding separates the lid from the case and also creates a lip to make it easier to get a grip on the lid when opening it.

The lid molding is nearly identical to the veneer panel molding you just made, only larger in scale. (It's made out of ½"-thick stock.) Once the molding pieces are mitered to length, they can be glued to the bottom of the lid, flush with the inside face.

HARDWARE. With the lid complete, you can go ahead and add a few more pieces of hardware at this point. (The rest of the hardware will be added later, when the entire chest is complete.) To start with, I mortised in the strike plate for the lock along the front edge of the lid. (See page 50 for more on this.)

Next, I cut mortises in the back edge of the lid and case for some hinges (detail 'b'). But after fitting the lid to the case, I removed the hinges. This makes it easier to add the lining and mirror to the inside of the lid later on.



add a pair of DRAWERS

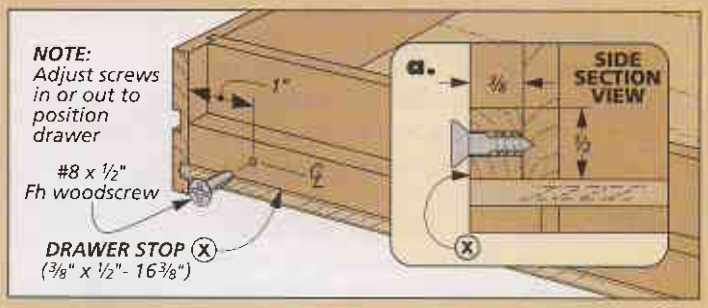
From a woodworking standpoint, the drawers of the jewelry chest are probably the most interesting part of this project. And the reason for this is the drawer fronts. If you take a look at the drawing above, you'll see that the false front of each drawer has mitered returns on the ends. So when the drawers are closed, they blend right into the rest of the case.

Aside from the false fronts, there's not really anything out of the ordinary about the two identical drawers. Each one is assembled with tongue and dado joints. A groove on the drawer front and sides holds a plywood bottom. And an additional groove on the outer face of the drawer sides allows the drawer to fit over the runners in the case (detail 'b').

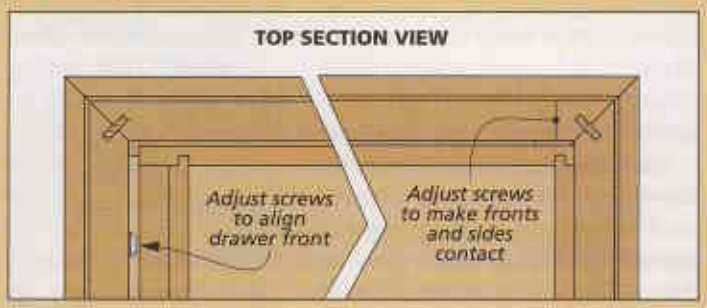
FALSE FRONTS. After gluing up the drawers, you can start on the false fronts. If you take a look at the drawing above, you'll see there really isn't much to the returns. They're simply short blocks of wood that are joined to the false front with splined miter joints. The only thing to point out is that there is a small gap between the return and the side of the drawer (detail 'a'). This is to create enough clearance for the drawer to fit into the case. Once the false fronts are done, they can be glued to the drawers.

DRAWER STOPS. The last step to complete the drawers is to add a stop to each drawer. I used a low-tech approach here. Take a look at the box below for more on making and adjusting the drawer stops.

How-To: Add Adjustable Drawer Stops



Drawer Stops. *Each drawer stop is nothing more than a narrow strip of wood glued to the back of the drawer. A small wood screw is then inserted near each end of the drawer stop. The screws will contact the back of the case to act as stops for the drawer.*



Adjust the Screws. *Back out the two screws in each drawer stop so that the false front of the drawer is flush with the front of the case when the drawer is closed. The ends of the mitered returns on the false fronts should just lightly touch the sides of the case.*

building the STAND

The stand for the jewelry chest is almost like a separate project. In fact, it's actually an option — but one that really showcases the project and sets it apart from other jewelry chests.

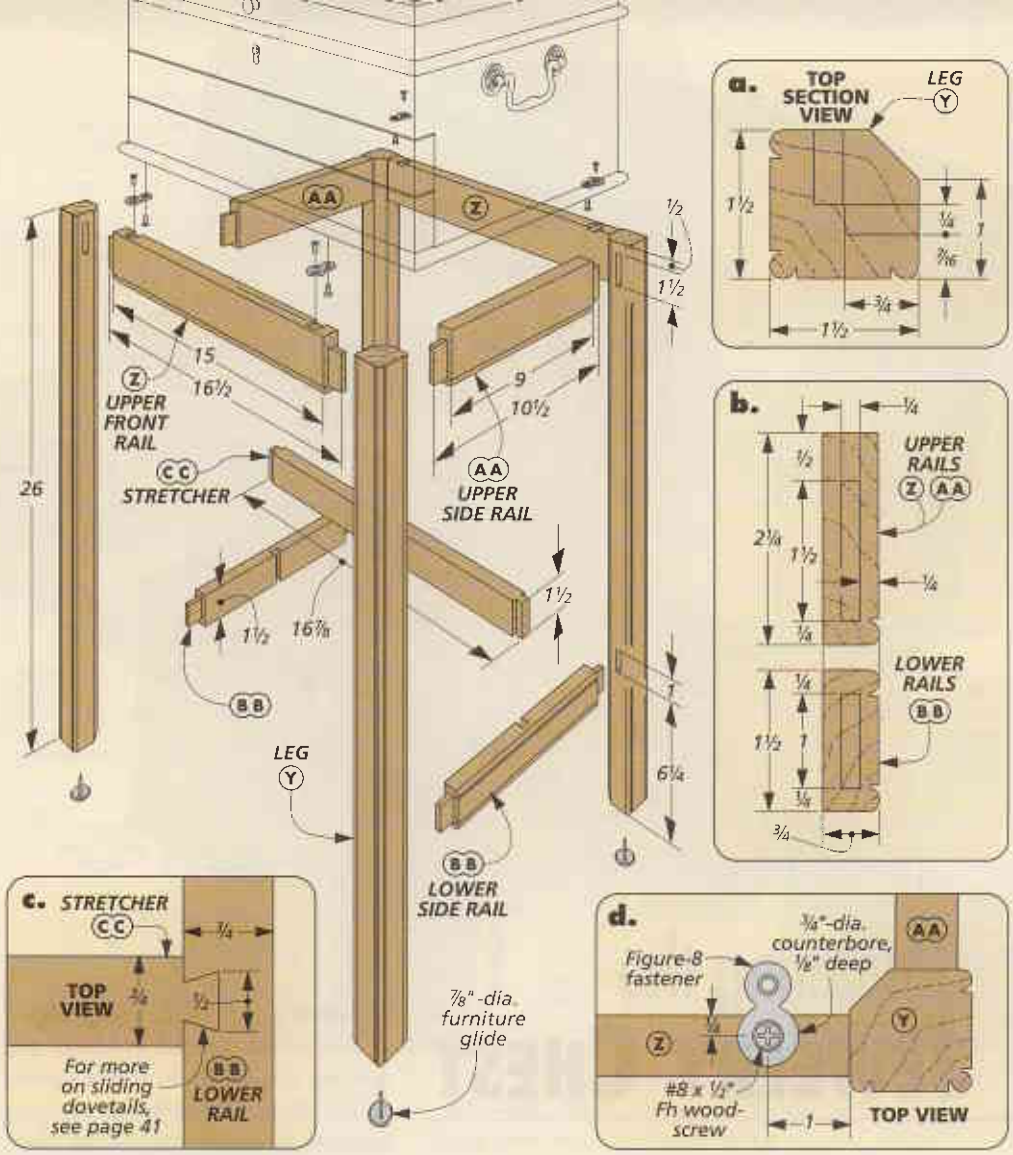
LEGS. As you can see by looking at the drawing at right, the stand is pretty straightforward. The legs are joined to the rails with traditional, mortise and tenon joints.

I began making the stand by cutting the legs to size out of solid hardwood stock. Next, I laid out and cut all the mortises for the upper and lower rails.

When you're laying out the mortises for the lower rails, make sure to pay attention to the orientation of the legs so that you don't accidentally cut a mortise in the wrong face of the leg.

Once you've made the mortises, you can bevel the inside corner of each leg and rout a bead profile along the three remaining edges, as shown in the box below.

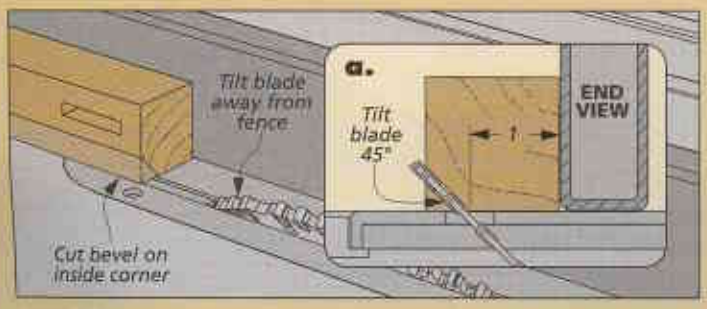
MAKE THE RAILS. The legs are connected by four upper rails and two lower rails. After cutting these pieces to size, you can go ahead and cut tenons on the ends of each rail to fit the mortises in the legs (detail 'b'). Then beads are routed on the rails to match the legs.



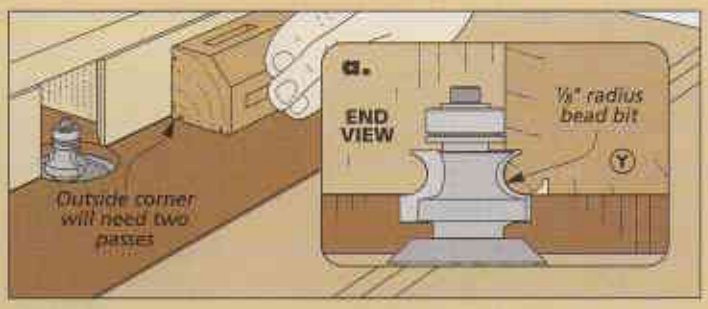
SLIDING DOVETAIL. The last step before gluing up the stand is to make a stretcher. This piece is connected to the lower rails with sliding dovetail joints. (See page 41 for more on this joint.) Once this is done, you can assemble the stand.

HARDWARE. Now all that remains to complete the stand is to add the hardware. I installed glides on the bottom of the legs and some figure-8 fasteners on the tops of the rails to attach the jewelry chest to the stand (detail 'd').

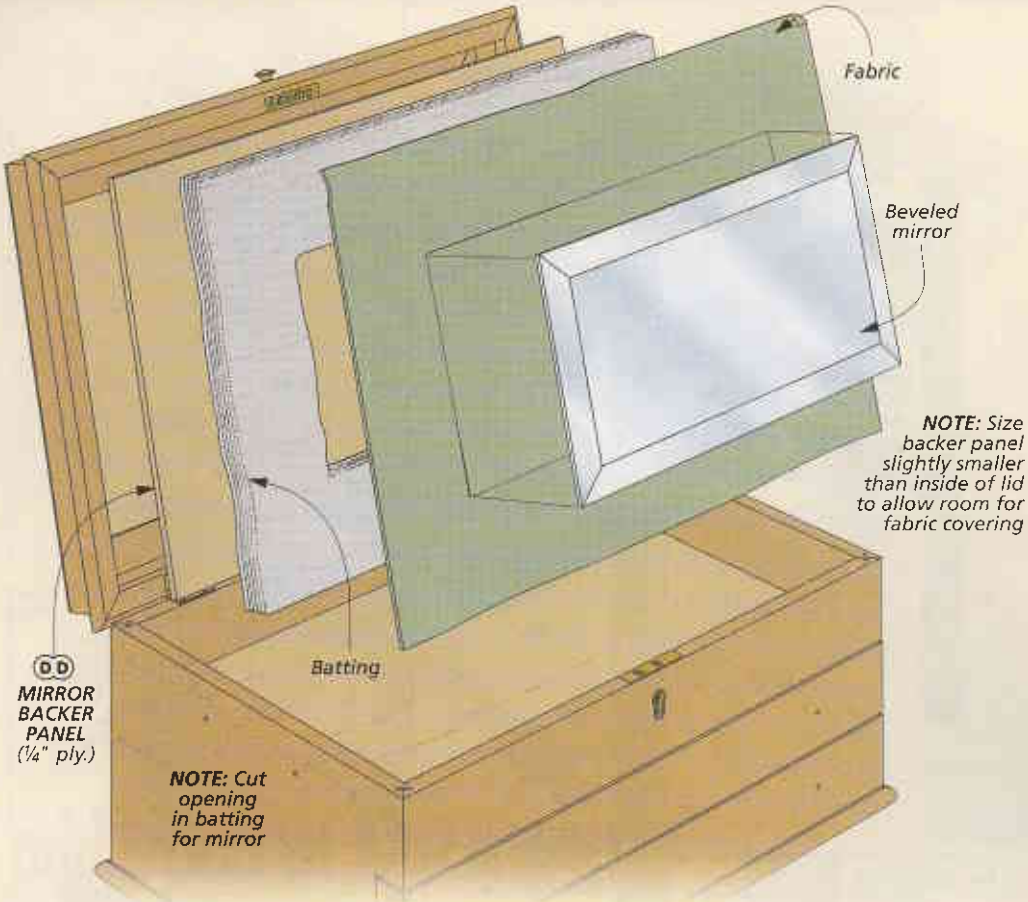
Shaping the Legs

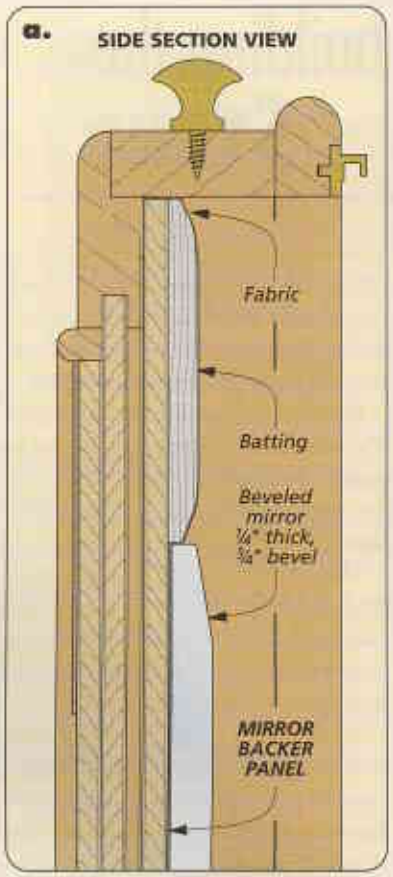


Bevel the Inside Corner. *After making the mortises for the rails, cut a bevel along the inside corner of each leg. The blade should be tilted to 45°, away from the fence. This way the waste won't be trapped between the blade and the fence.*



Rout Beads. *Using a bead bit, rout a bead profile on the other three corners of each leg. The bead on the outside corner is routed in two passes, flipping the workpiece end for end between passes. The upper and lower rails will also get a similar bead detail.*





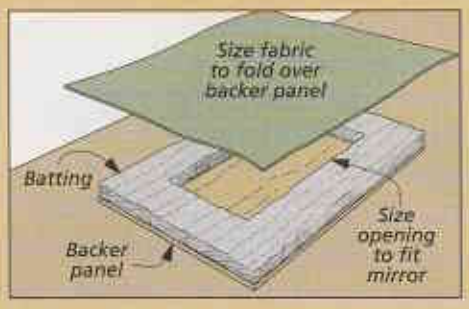
completing the JEWELRY CHEST

At this point, you're more or less done with the construction of the jewelry chest. There are just a few final touches to be added in order to complete the project. But before you begin on any of these, you'll want to take care of any staining or finishing that you plan on doing.

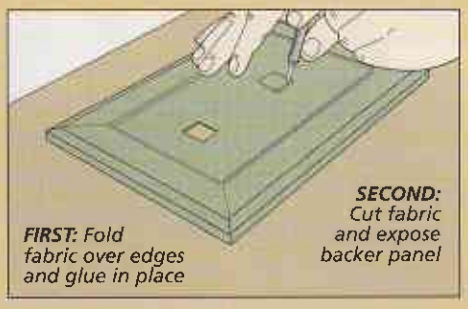
MIRROR. One of the first things I did to finish out the inside of the jewelry chest was to add a mirror to the underside of the lid (so you can see yourself). But rather than simply attaching the mirror directly to the lid, I made a padded, cloth-covered backer panel to hold the mirror. This is nothing more than a piece of 1/4" plywood that is wrapped with fabric and several layers of cotton batting. An opening is cut in the center of the batting to create a recess for the mirror. After the cloth and batting are glued to the panel, the mirror is added. Then the whole assembly is glued to the inside of the lid. For more on this, see the box below.

HARDWARE. The next step is to add the knobs and pulls to the jewelry case, as shown in the drawing on the opposite page. Brass knobs are added to the lid and the drawers (details 'a' and 'b'). Then a brass

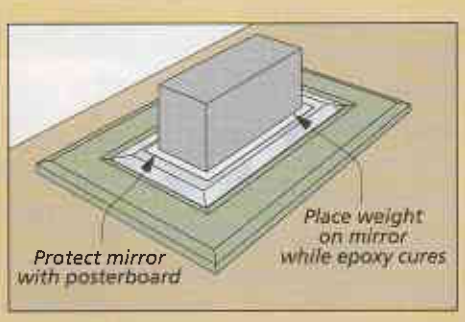
How-To: Add the Mirror



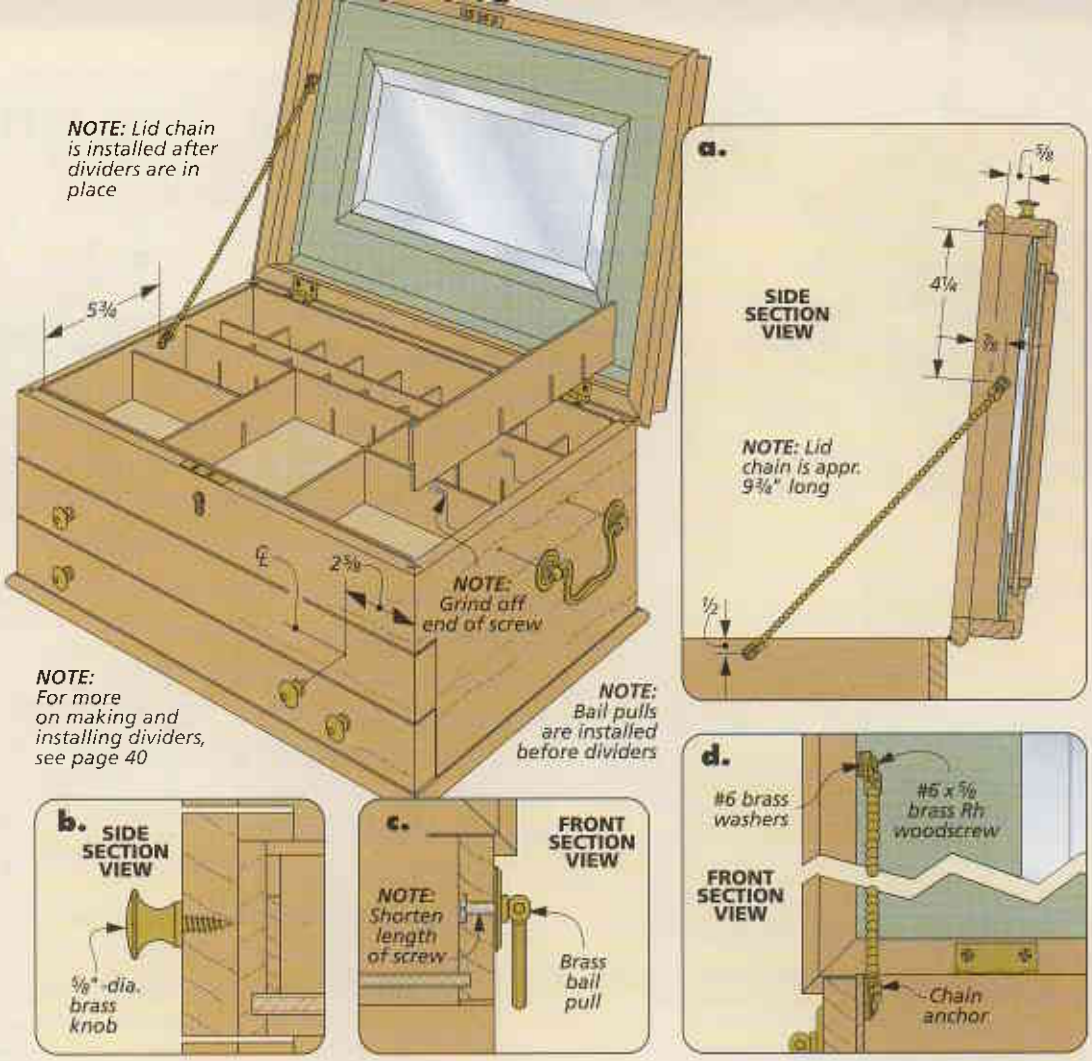
Backer Panel. *A "pillow" frame is made for the mirror by adding several layers of cotton batting to a plywood backer panel. Then cut a piece of fabric to fit over everything.*



Add Fabric. *Fold the fabric over the edges of the panel and glue it in place. Then cut out some holes in the center of the fabric so you can epoxy the mirror directly to the panel.*



Let it Dry. *Place a weight on top of the mirror while the epoxy cures. After it's dry, you can glue the mirror/panel assembly to the inside of the jewelry chest lid.*



pull is added on each side of the case, as shown in detail 'c.' There's just one thing to note here. The machine screws that came with the pulls I used were too long for the ½"-thick sides of the case. So I had to grind down the ends of the screws a bit to shorten them up.

DIVIDERS AND LINING. One of the details that makes this project a jewelry chest is all the divided compartments. The interior spaces of the tray and the drawers are divided into rows of tiny compartments to hold rings, bracelets, earrings, and other jewelry. And to cushion the jewelry, the bottoms of the compartments are lined with fabric (the same velvet material that I used on the inside of the lid).

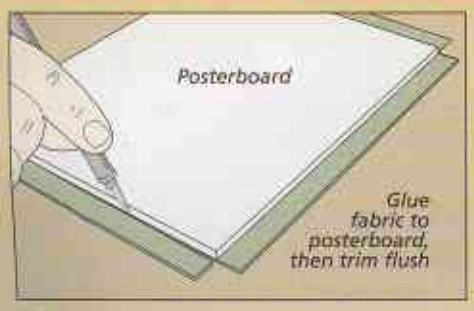
The compartments are created by a grid-like assembly of interlocking wood dividers. Each level (the tray and the two drawers) has a different configuration of dividers. See page 40 for more details on the dividers.

The bottom of each compartment is lined with velvet (see box below). But to raise the bottom of some of the compartments, I added some filler blocks to the tray and drawers. These are just pieces of rigid foam insulation board that I planed down to ½" thick. I know it sounds odd, but I used my thickness planer for this and it did a great job. These filler blocks get wrapped with velvet as well.

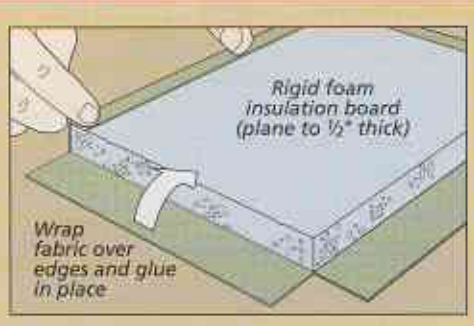
RING COMPARTMENT. The center compartment of the tray is designed to hold rings. The rings slip in between rows of foam caulking rod that are covered with velvet (see page 40 and box below).

LID CHAIN. With the dividers in place, you can add the last piece of hardware. To prevent the lid from falling back and possible pulling out the hinges, I added a brass chain and anchors to the inside of the case and lid (see drawing above and detail 'a'). Once this is done, you can mount the chest to the stand and start filling it up. W

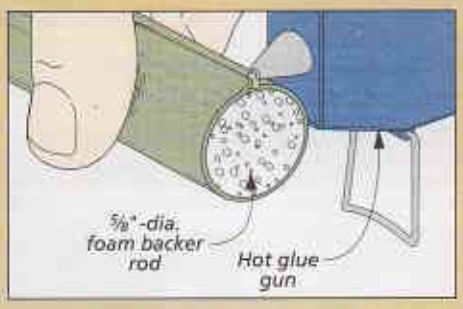
Foam, Fabric, & Liners



Compartment Liners. *To line the bottoms of the compartments, I glued fabric around pieces of posterboard that were cut to fit in the openings. These just slip into place.*



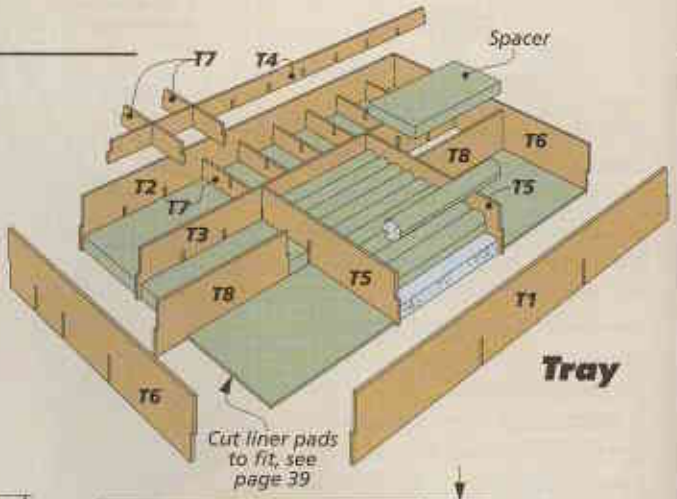
Spacer Blocks. *I raised the "floor" of some of the compartments by installing foam spacer blocks. These are made from rigid foam insulation board, planed down to ½" thick.*



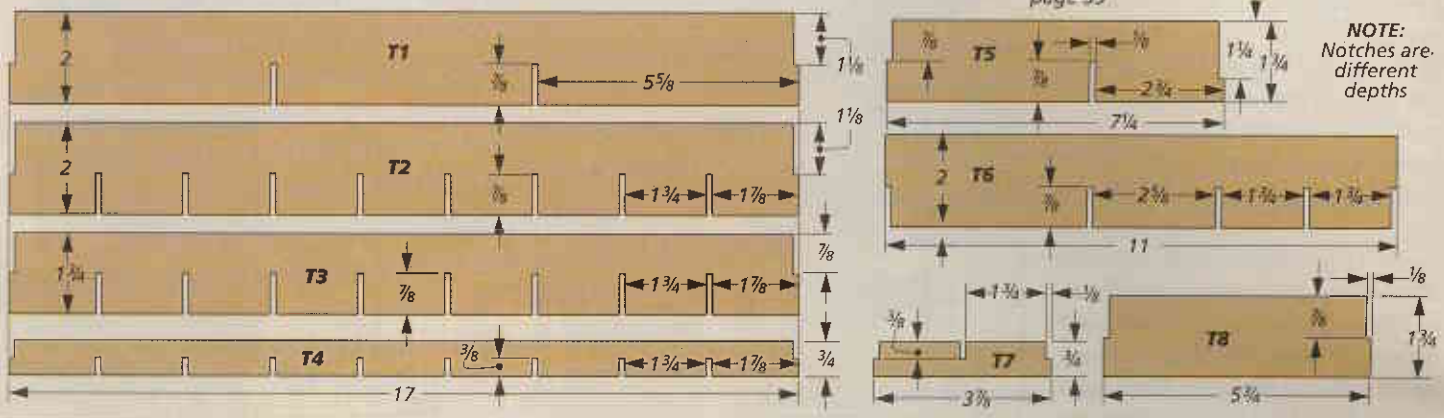
Ring Holders. *To create holders for rings, wrap fabric around short lengths of foam backer rod and glue the fabric in place. Then glue the rods in place in the jewelry chest.*

Dividers

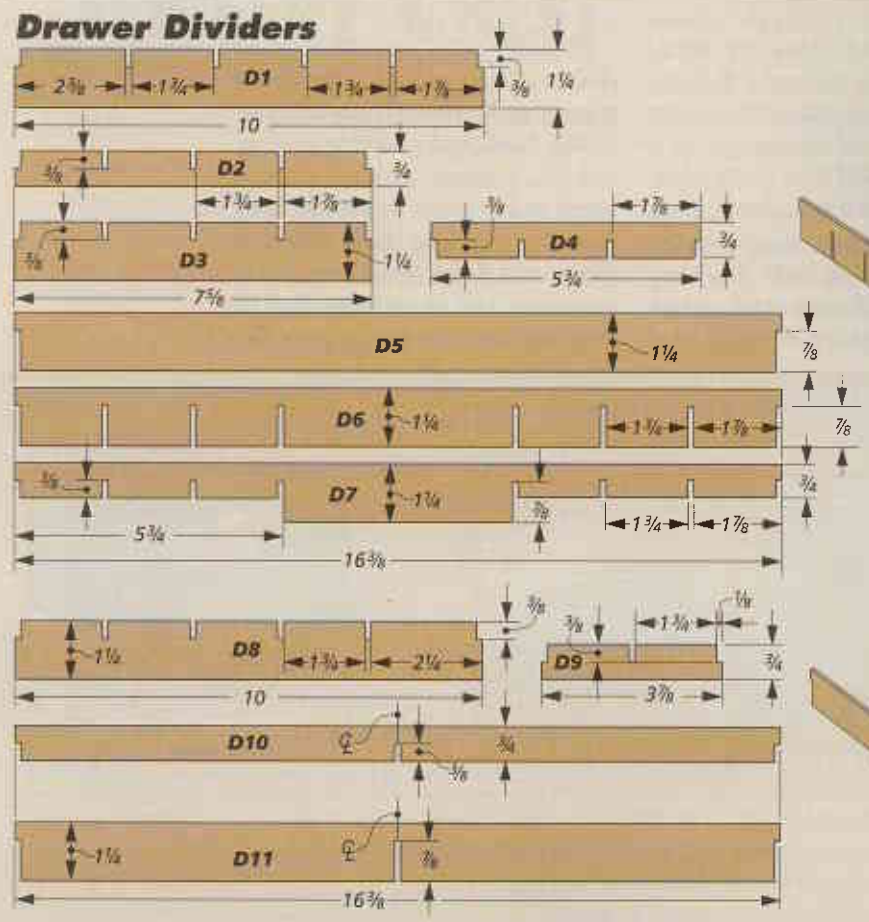
The compartments in the tray and drawers of the jewelry case are created by a grid of interlocking dividers. These dividers are made out of 1/8"-thick solid wood. (You can find the dimensions for the individual dividers in the drawings below.) The dividers are connected with half laps and get glued together into an assembly before being slipped into place.

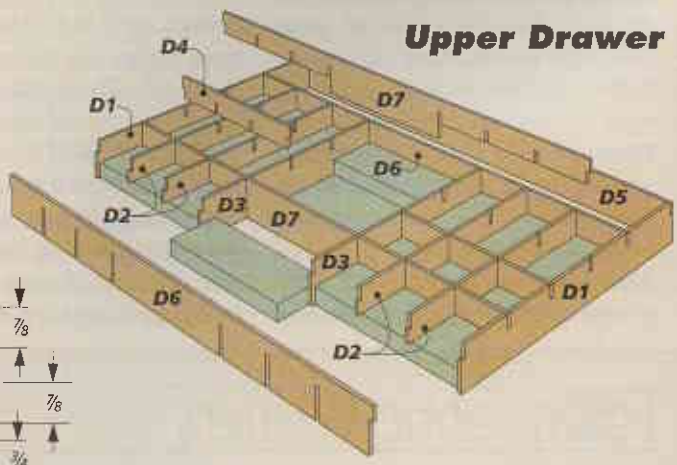


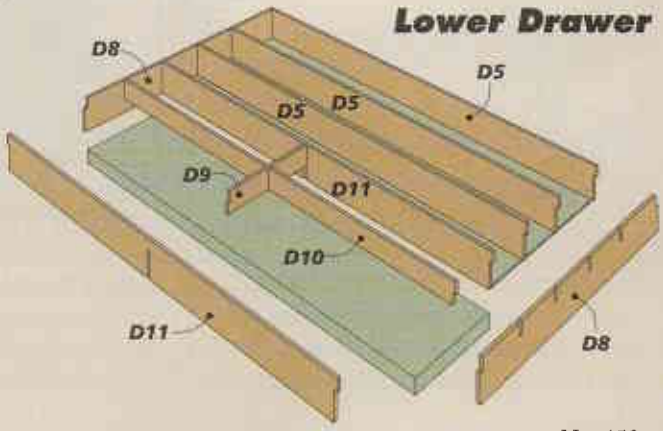
Tray Dividers



Drawer Dividers







how to make a Sliding Dovetail Joint

If you're looking for a strong, locking joint that's also attractive, you can't go wrong with a sliding dovetail.

When it comes to joining the end of a workpiece to the middle of another piece (like the stretcher and rails used in the stand for the jewelry chest) there are all sorts of joints to choose from. But one of my favorites is a sliding dovetail joint. And here's why.

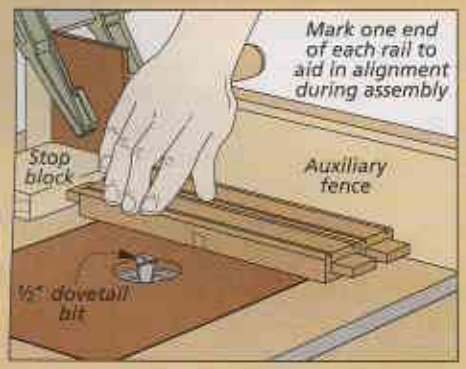
BENEFITS. Many woodworking joints (like dowels, biscuits, or even mortise and tenon joints) rely primarily on glue for their strength. But a sliding dovetail is one of the few joints that combines mechanical strength with a good glue bond. The result is a joint that won't pull apart, even if the glue fails. As an added bonus, sliding dovetails also look nice, as you can see in the photo above.

MAKING THE JOINT. Making a sliding dovetail joint is a two-step process. First, you have to create a dovetailed slot in one workpiece. Then you make a dovetail on the mating piece to fit that slot. And in the case of the stretcher and rails on the jewelry chest stand, I did everything on the router table (see the How-To box below).

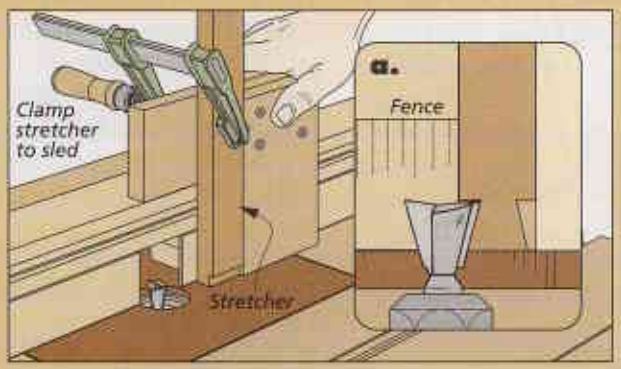
Creating the dovetail slot is pretty simple. Most of the time, this is done using a router and a dovetail bit. All it usually takes to make the slot is a single router pass.

Routing the dovetail to fit in the slot is a little more challenging. The trick is to start by cutting the dovetail slightly wider than the slot. Then gradually trim off material from each side of the dovetail to "sneak" up on the fit. The goal is a dovetail that slides smoothly in the slot without too much effort, but without any slop. W

How-To: Rout a Sliding Dovetail



Rout Slots. *Using an auxiliary fence and stop block on your miter gauge, rout a dovetail slot in both lower rails of the stand.*

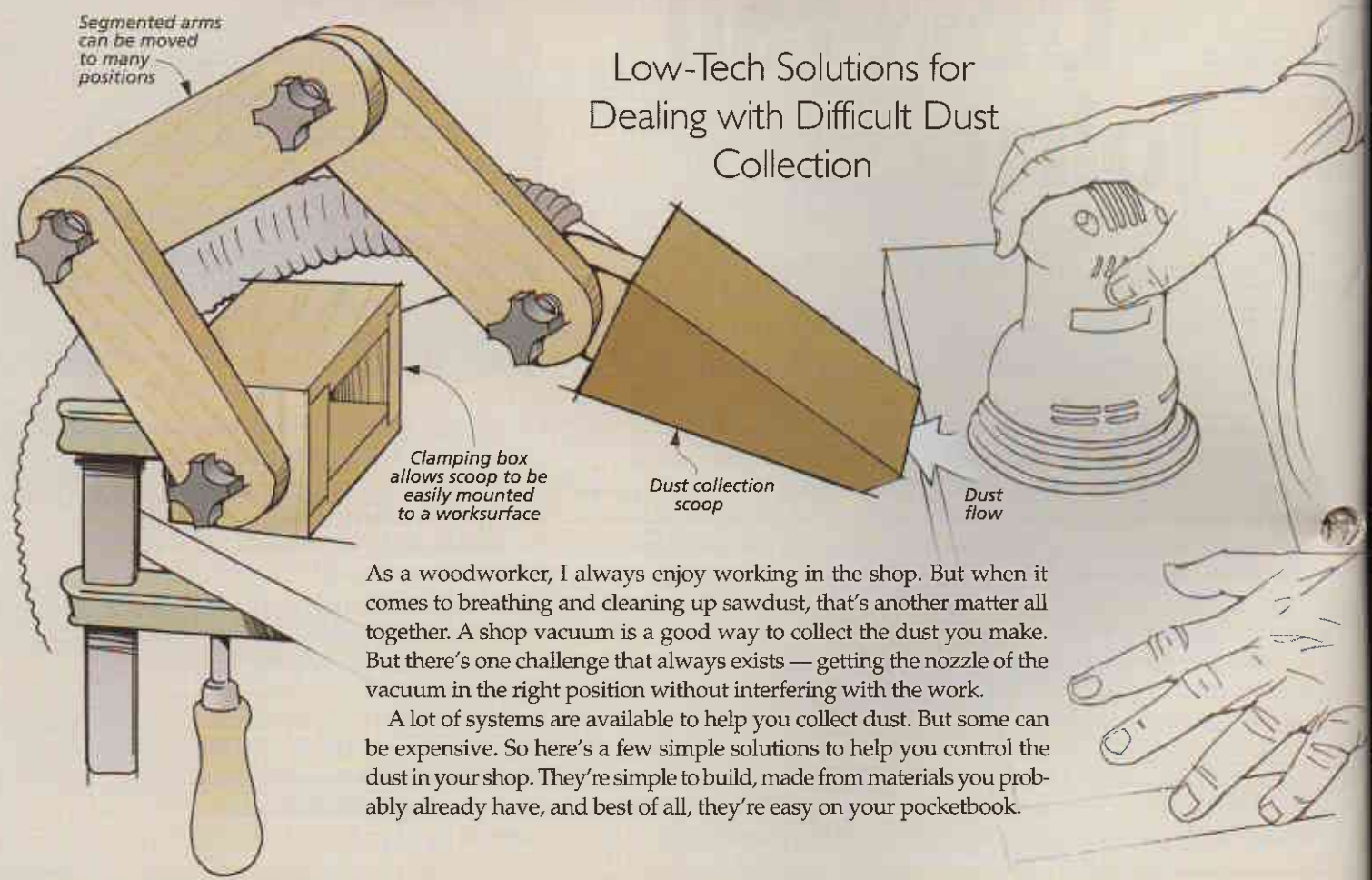


Rout the Dovetails. *Without changing the height of the bit, rout both sides of the dovetail. A simple sled rides along the fence to help hold the workpiece upright.*

Test the Fit. *If the fit is too tight, reposition the fence and trim the sides of the dovetail.*

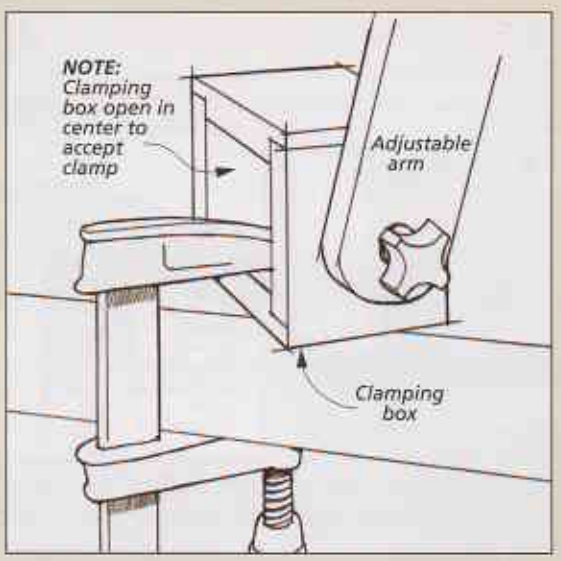
shop-built Dust Collection

Low-Tech Solutions for Dealing with Difficult Dust Collection



As a woodworker, I always enjoy working in the shop. But when it comes to breathing and cleaning up sawdust, that's another matter all together. A shop vacuum is a good way to collect the dust you make. But there's one challenge that always exists — getting the nozzle of the vacuum in the right position without interfering with the work.

A lot of systems are available to help you collect dust. But some can be expensive. So here's a few simple solutions to help you control the dust in your shop. They're simple to build, made from materials you probably already have, and best of all, they're easy on your pocketbook.



ADJUSTABLE DUST SCOOP

When sanding, keeping fine sawdust from floating all over the shop is always a challenge. It's difficult to get a collection system in the right position to pick up the dust.

That's why I made the dust scoop you see in the drawing above. The arm is adjustable. That way you can place the collection scoop so it's positioned where it's needed most.

ADJUSTABLE ARM. The segments are pieces of plywood rounded at the ends. I used three pieces but you can use more for extra reach.

To join the arms, I drilled a hole in the end of each of the pieces and then added threaded inserts and studded knobs. These knobs allow you to adjust the arms in any position.

The arm is attached to a wedge-shaped box made from 1/4" hardboard with a 3/4" plywood end piece at the back. The end piece is used to mount a small plywood tab for attaching the arm plus it gives you a place to drill a hole that accepts the nozzle of your shop vacuum.

CLAMPING BOX. Attached to the other end of the arms is a clamping box, like you see in the illustration at left. This box makes it easy to clamp the dust scoop to your workbench or other worksurface.

You'll also note that it's made so that the box is open in the center. This allows you to turn the scoop so it can be used in either the horizontal or vertical position.

I like to use my dust collection scoop for sanding. But it also works great on my router table, workbench, and anywhere else I find it difficult to collect the dust.

You can quickly move it from place to place. So it only takes a few seconds to clamp the dust scoop in place, adjust the arms into position and you're ready to go to work.

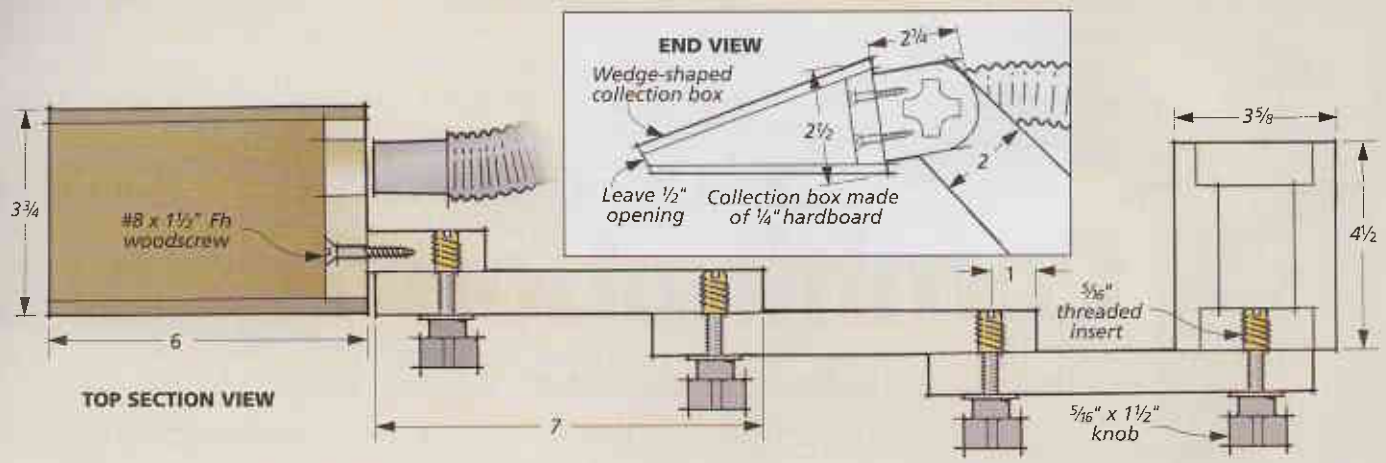


TABLE SAW DUST COLLECTION

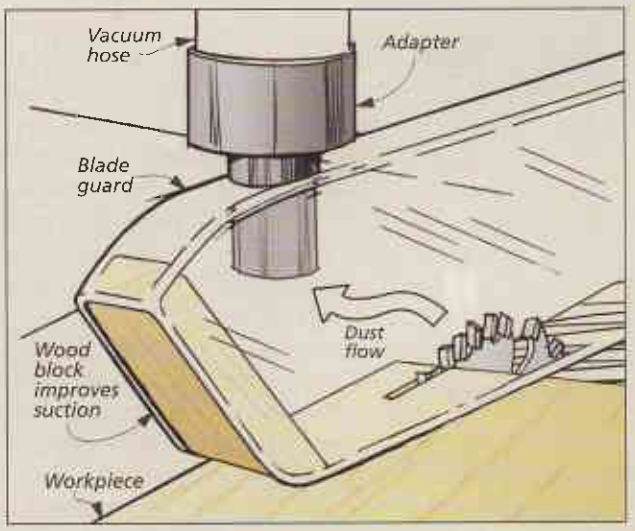
No tool matches my table saw when it comes to making dust. And even when my dust collector is turned on, it still doesn't collect *all* of the dust. Some of it still comes flying off the top of the spinning blade.

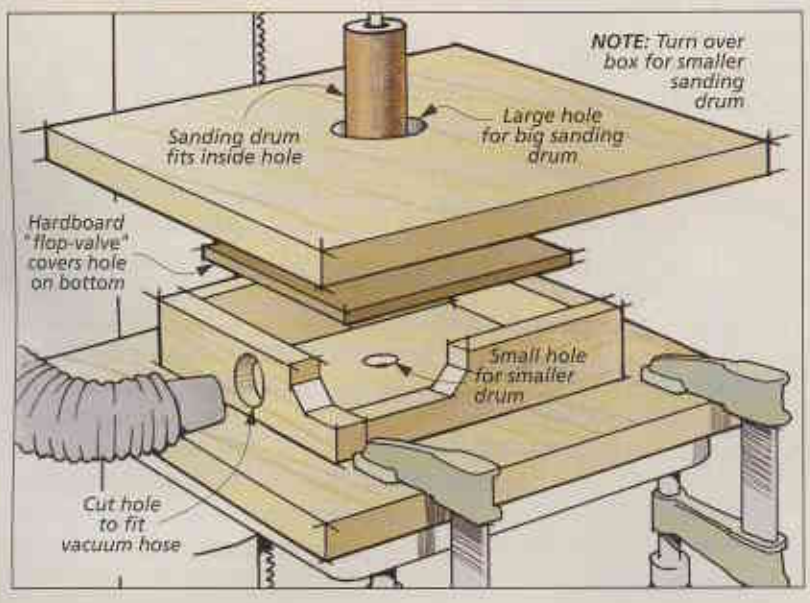
So to collect this dust, I modified the blade guard to double as a dust collector, like you see in the drawing at right. Now when I make cuts at the table saw, the dust goes into my vacuum and not my face.

To do this, you'll need to use a vacuum hose adapter that you can find at most hardware stores or home improvement centers. The small end of the adapter is tapered, so it fits tightly into a hole I drilled with a spade bit in the top of the blade guard. Just be sure to locate the hole near the front of the blade guard, away from the blade.

To get better suction, cut a small wood block to to fit the front opening in your blade guard (see drawing at right). Then use epoxy to hold it securely in place.

It's easy to keep the hose out of the way when making cuts. Just connect the hose to a hook on the ceiling above the saw.





DRILL PRESS SANDING BOX

I like to use my drill press as a drum sander. But the sanding drum throws off a lot of fine dust. So to control the dust during sanding, I built a sanding box that clamps to the drill press table (see drawing at left).

It's simply a plywood box with an oversized top and bottom that accommodates different drum sizes. There's a hole in the top for larger drums and another one in the bottom for smaller ones. By turning the box over you can match the hole size to the drum you're using. A third hole in the side holds the vacuum hose.

To increase the suction, I added a "flop-valve" made from a piece of hardboard. Anytime the box is turned over to change a sanding drum size, the hardboard falls over the hole that's not being used.

It doesn't take a lot of time to set up. And since the box and the vacuum collect the dust that's created, there's not a lot of dust drifting around the shop. W

5 tips and tricks for using a Combination Square

Simple in design, versatile in use. Here are a few handy ways to get the most out of your combination square.

A combination square is one tool you'll find in just about every workshop. I know my square is never more than an arm's length away. And there's a simple reason — it's one of the most versatile hand tools in my shop.

For starters, I'm always using it to check the ends of my workpieces for square. Or to verify the accuracy of a miter cut. But there's so much more you can do with a combination square, from layout work to tool setup. The tips and tricks that follow will help you get the most out of your combination square.

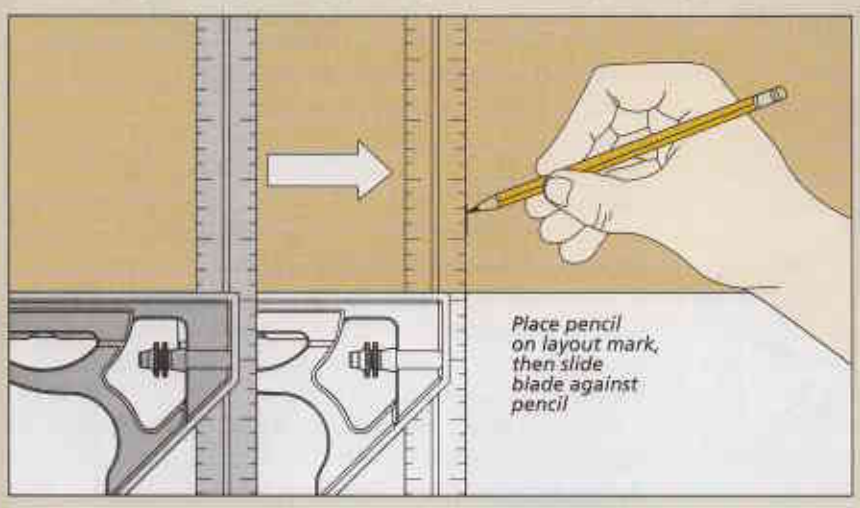
One last thing. There are all kinds of combination squares on the market. And as with most tools, you get what you pay for. For a list of sources for the high-quality, *Starrett* combination square shown here, be sure to turn to page 49.

1 Marking

Accuracy in woodworking often starts with the simple task of laying out a cut. And here's a simple tip for more accurate layouts.

Instead of sliding the blade of the square to a layout mark and then drawing a line, place the pencil tip on the mark first. Then slide the blade up against the pencil.

This way, you don't have to try to offset the blade by the thickness of the pencil lead. This offset is a guess at best, since it varies depending on the type and sharpness of the pencil. With this tip, you'll end up with a line exactly where you want it.



2 Parallel Lines

One layout task I find myself doing on a lot of projects is drawing a line parallel to an edge. To do this quickly, you can use a combination square (photo above).

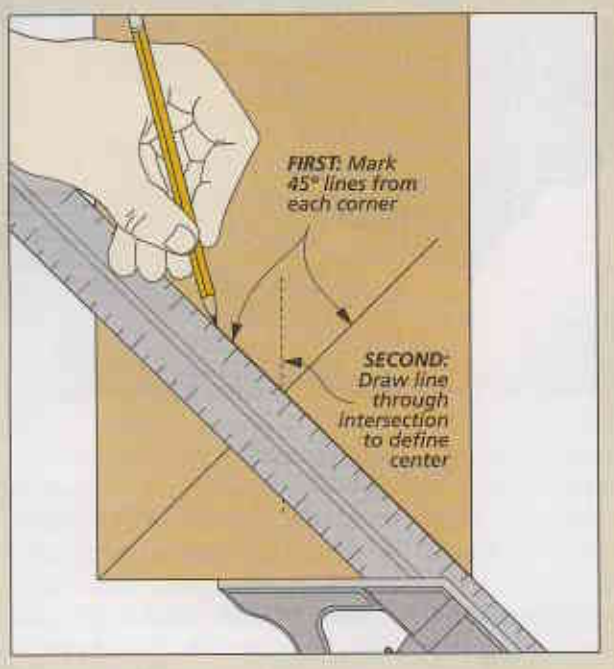
Start by setting the blade of the square to the desired distance (keep that first tip in mind as you do this). Then position the head of the square against the board. Now holding the pencil tight to the end of the blade, slide the square (and pencil) along the edge to draw a perfectly parallel line.

3 Depth Gauge

A combination square makes a handy gauge for accurately measuring the depth of any recess — a dado, rabbet, or mortise.

To do this, loosen the blade of the square and slide it back so it's even with the 90° face of the square. Next, set the face of the square against the outside edge of the workpiece, like you see in the photo at right. Now, extend the blade of the square into the recess until it just touches the bottom. Finally, lock the blade securely in place.

Now, you can pull the combination square out of the opening and read the depth. You'll find it right where the blade intersects the head of the square — a quick and easy measurement.



4 Centering

Another way I use my combination square every day is to find the center of a workpiece. Now you could just use the square to measure the width and then divide that in half to find the center. But the technique I use doesn't require any measuring or calculating.

In the drawing at left, you can see how to use the 45° face to draw a diagonal line from each corner of a workpiece (like a drawer front). The exact center of the workpiece is right where the lines intersect.

Doing this on the narrow edge of a workpiece is a little tricky. So instead, I set my combination square to mark close to the center, then make a pair of marks — one off each face. This will get you really close. Then it's just a matter of "splitting" the difference to find the center of the edge.

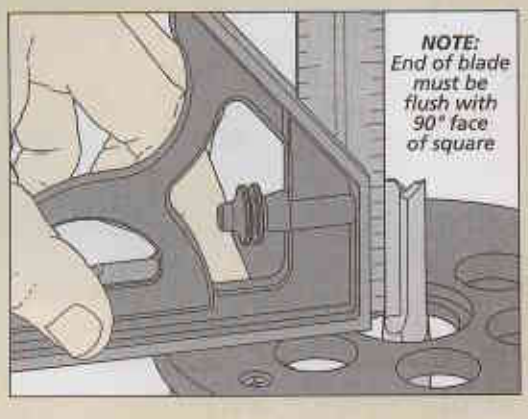
5 Tool Setup

One last thing to keep in mind about a combination square is that it's not just for use on a workpiece — it's a great set-up gauge for shop tools.

Like the depth gauge measurement shown at the top of the page, a combination square works well for setting the depth of cut for a tool. I use my combination square all the time for setting the height of my saw blade as well as the depth of router bits, like you see in the drawing at right.

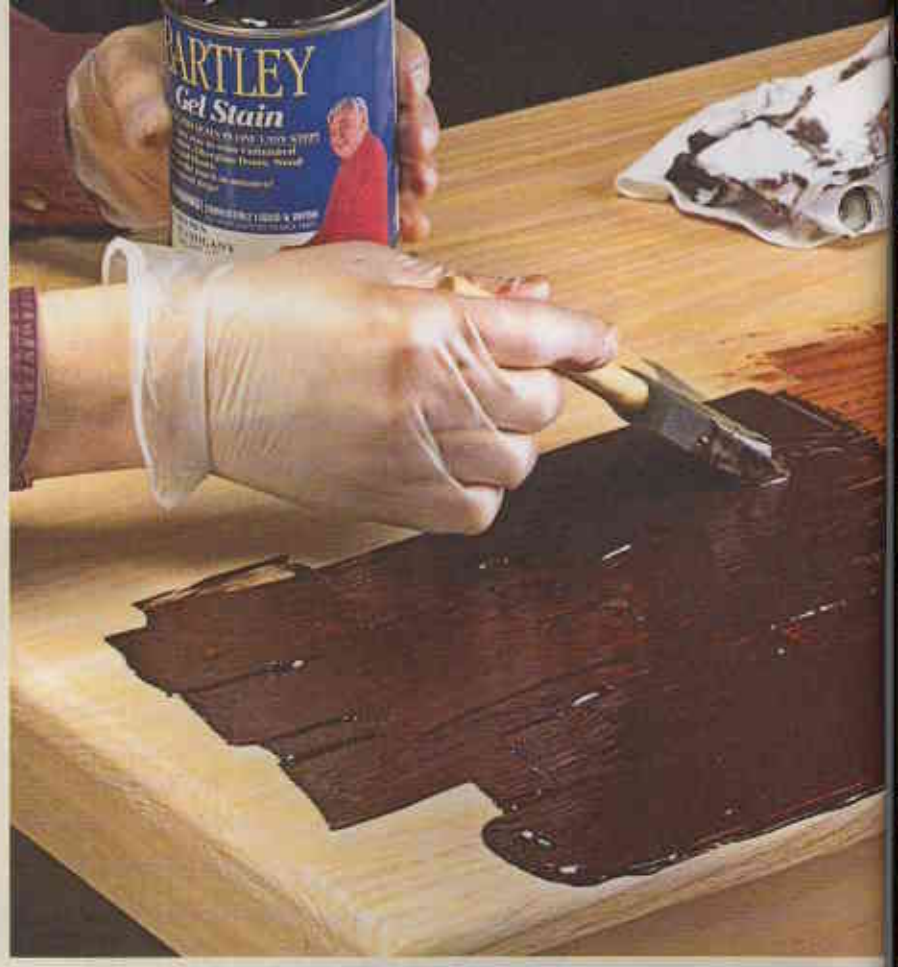
To get an accurate measurement, it's important that the end of the blade be flush with the 90° face of the square. So be sure to use a flat surface as your reference when you set the blade. Then it's just a matter of sliding the scale next to the bit (or blade) and checking your setting.

A combination square is handy even without its blade. You can use the square to check whether your table saw blade is set to 90° or even 45°, as in the photo at right. To get an accurate reading, just be sure the square rests against the body of the saw blade and not the teeth. W



great results with Gel Stains

Less muss and a lot less fuss. Gel stains are a quick and easy choice for adding color to any project with guaranteed results.



Working with a traditional oil stain can be frustrating. You know the kind. The one where you spend a bunch of time stirring the can to remix the pigment that's settled to the bottom. And because it's thin and watery, it penetrates quickly into the surface. This can cause uneven color across the project and even give a blotchy look to the surface. Plus, you have to deal with streaks, lap marks, and assorted runs and drips while you work.

GOING WITH A GEL. If you've experienced the same kinds of problems with oil stains as I have, you might want to give gel stains, like the ones you see below, a try.

With a gel stain, the pigment is suspended in a thick carrier that has the consistency of pudding. It's this thickness that prevents most of the problems you experience working with a traditional oil stain.

Plus, the pigment in the stain doesn't sink to the bottom of the can. This means you won't have to spend any time mixing the stain as you work. (Out of habit, I still tend to give a gel stain a couple stirs once I open the can.)

SPREADING IT ON. Since a gel stain doesn't require a lot of (if any) mixing, you're ready to start applying it right away. To do this, I like to use a foam brush. But a clean cloth or bristle brush works just as well.

As you apply the stain, you don't have to worry about racing through

A number of manufacturers produce gel stains (or in the case of *Zar*, a thicker, oil-based stain) that make the process of staining easier.

A gel stain goes on and stays put, so there's no worry about runs and drips, even on vertical surfaces.

A clean cloth makes quick work of wiping off the excess, resulting in a nice, even color on all areas.

Shop Tip: End Grain

When it comes to staining any project, end grain is usually a problem. That's because it tends to soak up stain like a sponge, making the end grain darker than the rest of the project.

To avoid this problem with any type of stain, I find it best to sand the end grain a couple grits higher than the rest of the project. In the photo at right, I sanded the project to 150-grit, but then continued on to 220-grit on all the end grain areas. The result — a perfect match.

the process. The gel keeps the stain from penetrating too quickly. This virtually eliminates any color differences from one area of the project to another. (Check out the Shop Tip above for dealing with end grain.)

Another benefit of gel stains is the absence of lap marks. A thick gel stain gives you time to cover even large areas where it can be difficult to apply a traditional stain evenly. All you really need to do is overlap the areas as you go along.

In the photos at the bottom of the opposite page, you can see how well a thick gel stain works on vertical surfaces. The gel sticks in place, so there's no messy run marks or drips down the leg.

WIPING IT OFF. Once you have the stain applied, removing the excess is just a matter of wiping it off with a clean cloth. Just be sure to make the last few passes with the grain to avoid smearing the stain or leaving behind any telltale smudges.

If the overall color looks a little too light, or you need to even out one area a bit, you can apply another coat once the first one is dry.

CONSERVING THE GEL. I was concerned about one thing as I wiped off the excess. And that was how much seemed to go to waste. So to get more from the can of gel stain, I used a spreader, like the one in the margin, to "squeegee" the excess to a new area and reuse it.

THE DOWNSIDE. Sounds like gel stains are perfect, right? Well, there are a few drawbacks. First, gel stains don't come in as many colors as some oil stains. And second, trying to mix a custom color can be a hassle. Finally, it can be a challenge to work the thick gel out of the nooks and crannies of a project. Still, gel stains have earned a place in my shop.

PROTECTING THE STAIN. A couple of the gel stain manufacturers say their products color and seal in one step. But I still like to apply a protective topcoat. You can use whatever finish you like, but it's important to allow the stain to dry completely before applying any finish.

One last thing. If you find gel stains to your liking, you may want to try a gel finish. You can learn more about this in the box below.

▲ To avoid wasting your gel stain, you can use a spreader to "squeegee" the excess to another area of the project.

What's New: No-Drip Finish

While I was picking up a few cans of gel stain to try out, I decided to try a can of finish I'd never used before — gel varnish.

Like a gel stain, gel varnish is thick. So it's not prone to the problems of running and sagging that can be typical of thinner finishes.

The *Bartley's* gel varnish I used seemed even thicker than the gel stains. So it stays right where you brush it on, even on a vertical surface. This gives you time to work an area without worrying about finish running all over the place.

But what's even better is that once you wipe off the excess, it leaves behind a smooth, even coat that dries to the touch fairly quickly. Sure, you still have to wait a bit before applying another coat, but the "quick-dry" feature doesn't give dust any time to settle into the finish. And building up a few coats doesn't take any time at all. Turn to page 49 for sources.

▲ A thick, gel varnish brushes (or wipes) on easily. Then you can just wipe off the excess for a smooth, even look. Plus, buildup goes quickly since the finish dries fast.

Questions & Answers

Drilling and driving screws into MDF

Q ***When working with MDF, I find that woodscrews can split the workpiece or cause a noticeable bulge. How can I prevent this?***

Charlie Scheffel
Lyons, Illinois

A The shank of a typical woodscrew is shaped like a wedge. So the problem is that unless the shank hole and pilot hole are drilled just right, the screw can split the workpiece (left drawing below). But I've found that simply switching to a different fastener and using a simple, three-step drilling technique can help make the entire process virtually foolproof.

SHEET METAL SCREWS. Instead of traditional woodscrews, I like to use sheet metal screws (see right drawing below). Since the whole shank is straight, it isn't as likely to split the MDF.

Note: For extra holding power, I use screws that are ½" to ¾" longer than I would typically use for joining solid wood or plywood.

DRILLING THE SHANK HOLE. For the sheet metal screws to securely fasten the parts together, you'll need to size the shank and pilot holes accurately. The key to drilling the shank hole is to size it so the screw pulls the top piece down tightly to the bottom piece.

To do this, I find a bit that's slightly larger than the outside diameter of the threads. This way, the screw will just slip through the hole.

A COUNTERSINK. Another problem that you'll find in driving screws into MDF is that fibers from the lower piece tend to lift up and prevent the two parts from pulling together, as shown in the left drawing below.

To solve this problem, I drill a small countersink where the shank hole exits the top workpiece before drilling the pilot hole, as you can see in the right drawing. The countersink provides clearance for the raised fibers without affecting the fit of the two parts.

THE PILOT HOLE. At this point, you're ready to drill the pilot hole. The pilot hole should be the same as the inner diameter of the screw threads. This makes it easy to drive the screw, and still gives the threads plenty of bite in the workpiece.

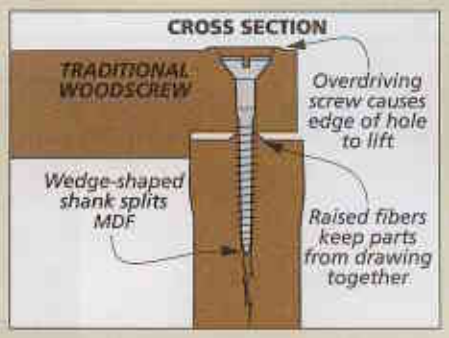
How deep should the pilot hole be? I like to drill it just past where the tip of the screw will end up. This way, I don't have to worry about the screw splitting the MDF deep in the hole and creating a bulge in the side of the piece. W

Do you have any questions for us?

If you have a question related to woodworking techniques, tools, finishing, or hardware, we'd like to hear from you.

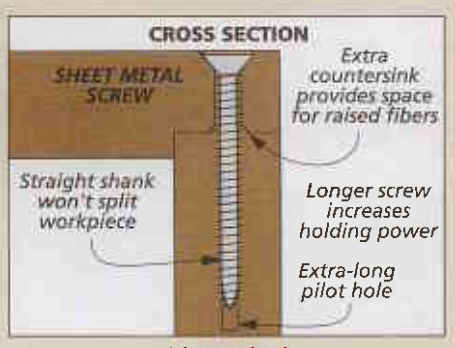
Just write down your question and mail it to us: Woodsmith, Q&A, 2200 Grand Avenue, Des Moines, Iowa 50312. Or you can email us the question at: woodsmith@woodsmith.com.

Please include your full name, address, and daytime telephone number in case we have questions.



PROBLEMS

- *Woodscrew splits MDF near edges causing bulges on face of workpiece.*
- *Shallow countersinks and overdriving screw "lifts" edge of hole.*
- *MDF fibers pull away from bottom workpiece and prevent the parts from joining together tightly.*



SOLUTIONS

- *Sheet metal screws and properly-sized shank and pilot holes prevent splitting and bulging of workpiece.*
- *Longer screws provide extra holding power in MDF.*
- *Countersinks at both ends of shank hole allow screw to pull joint together.*

Sources

TABLE SAW VIBRATION

Upgrading the pulleys and V-belt that came with your table saw is a great way to eliminate vibration. Although you can purchase these items separately, you might want to order a contractor's saw performance package from *In-Line Industries* (see margin) or the *Woodsmith Store.* These kits are designed for specific saws, and include a pair of pulleys and a 4-foot link belt. You should be able to find them for around $50.

BAND SAW BLADES

Having the right blade will make your band saw cut faster and smoother. The three blades shown in the article on page 10 are *Timberwolf* blades from *Suffolk Machinery* (see margin) Additionally, you can purchase them from the *Woodsmith Store.*

Resaw blades are designed to make sawing thick stock into thinner boards fast and easy. The carbide-tipped *Tri-Master* is made by *Lenox.* The thin *Wood Slicer* is available from *Highland Hardware.* You'll find the information you need to order each blade in the margin.

PATIO PLANTER BOXES

There isn't much else that you'll need to build the patio planter boxes on page 16 besides the wood. The adjustable shelf is supported by L-shaped shelf supports (#33860) that came from *Rockler.* You can order them from the *Woodsmith Store* as well.

To stand up to the elements, I used waterproof, polyurethane glue to assemble the planter boxes. Then I painted them with an exterior house paint from *Benjamin Moore.* The colors I used were "Lightning White" and "Weston Flax." The paint is available from the *Woodsmith Store.*

CLASSIC BOOKCASE

Besides being easy to build, the classic bookcase on page 22 doesn't take a lot of hardware. Other than a handful of screws, the only other hardware necessary are some leveler blocks (#31210) and a package of spoon-style shelf support pins (#22765).

If you plan on making several bookcases and connecting them, there are a couple of other items you'll need. The first is some 1⅛"-long connector bolts (#31831). Then, to go along with these, you'll need some matching cap nuts (#31815). All these supplies came from *Rockler.* They're also available from the *Woodsmith Store.*

JEWELRY CHEST

One of the things that makes the jewelry chest on page 30 an heirloom project is the use of solid brass hardware. Most of this came from *Rockler.* The hardware includes the hinges (#25759), knobs (#68627), bail pulls (#35402), half-mortise lock (#14861), and escutcheon (#35774). The lid chain (#00G44.01) and chain anchor (#00G45.15) came from *Lee Valley.* You'll also need some brass washers and brass woodscrews to attach the chain to the chest.

In the margin you'll find several sources of veneer for the lid. You can also buy pre-matched sets from the *Woodsmith Store.* All the other supplies — the mirror, fabric, batting, posterboard, foam insulation, and rod — were purchased locally.

To build the stand, you'll only need some figure-8 fasteners (#21650) and furniture glides (#24380) from *Rockler.*

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MAIL ORDER SOURCES

Similar project supplies may be ordered from the following companies:

Rockler
800-279-4441
rockler.com
Cap Nuts, Combination Square, Connector Bolts, Half-Mortise Lock, Leveler Blocks, Shelf Support Pins

Woodsmith Store
800-835-5084
Benjamin Moore Paint, Cap Nuts, Combination Square, Connector Bolts, Half-Mortise Lock, Leveler Blocks, Shelf Support Pins, Table Saw Upgrade Kit, Timberwolf Band Saw Blades, Veneer, Veneer Supplies

Herzog Veneers
336-434-4053
herzogveneers.com
Veneer

Highland Hardware
800-241-6748
highlandhardware.com
Combination Square, Wood Slicer Blades

Lenox
lenoxsaw.com
Tri-Master Blades

Certainly Wood
716-655-0206
certainlywood.com
Veneer

Starrett
978-249-3551
starrett.com
Combination Sqaure

Suffolk Machinery
800-234-7297
suffolkmachinery.com
Timberwolf Blades

In-Line Industries
800-533-6709
in-lineindustries.com
Table Saw Upgrade Kit

Constantine's
800-443-9667
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Veneer

WOODSMITH PROJECT SUPPLIES

We now feature hardware from ROCKLER in many of our new project kits. To order, please use our toll-free order line, see below. It's open Monday through Friday, from 8 AM to 5 PM Central Time. Before calling, please have your VISA, MasterCard, Discover, or American Express card ready.

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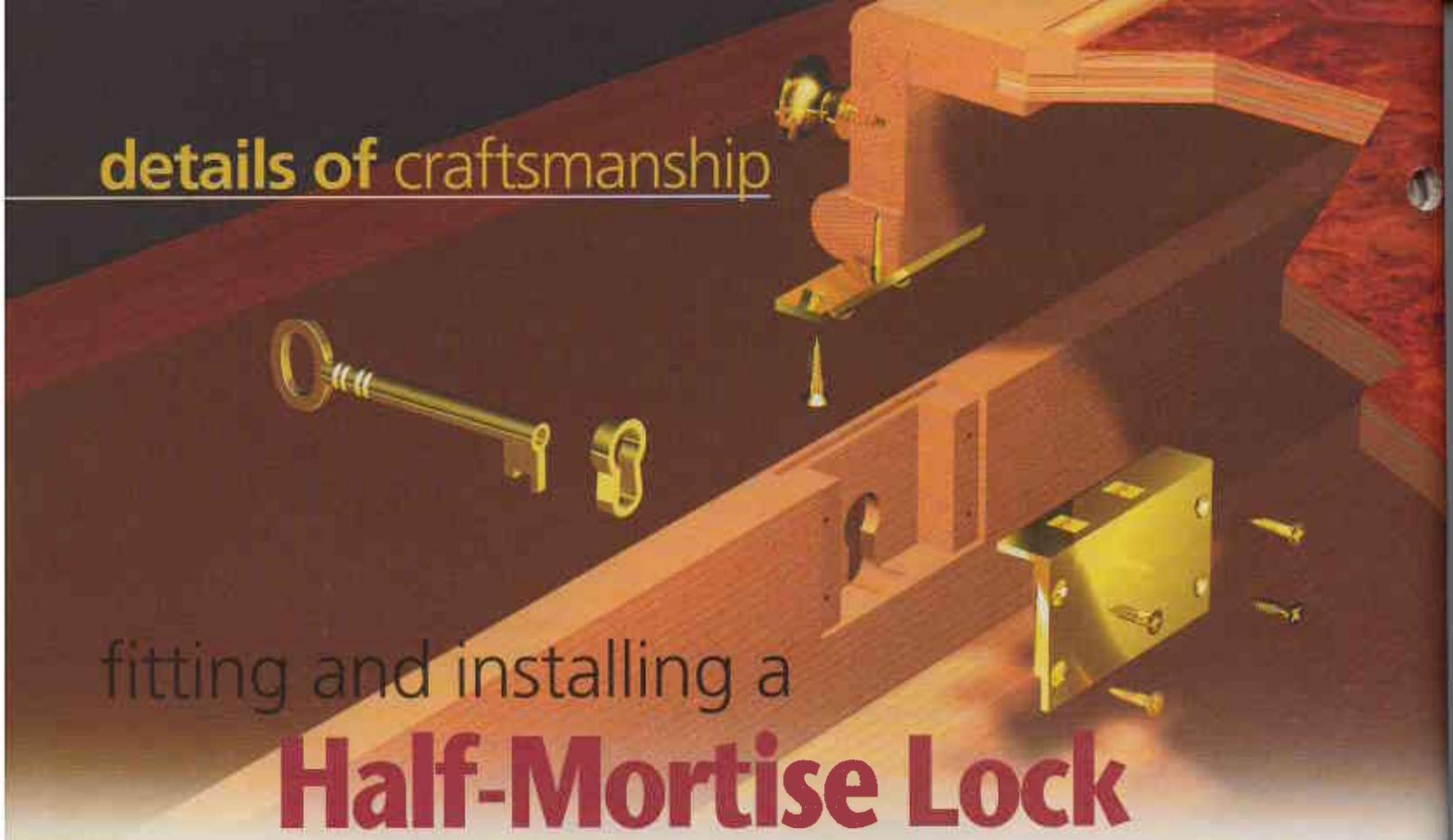
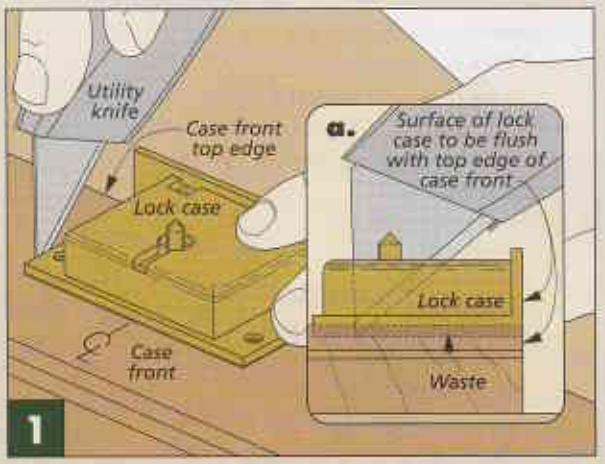


fitting and installing a Half-Mortise Lock

The right hardware can make a great-looking project even better. Use these simple steps to put this stand-out detail in your projects.



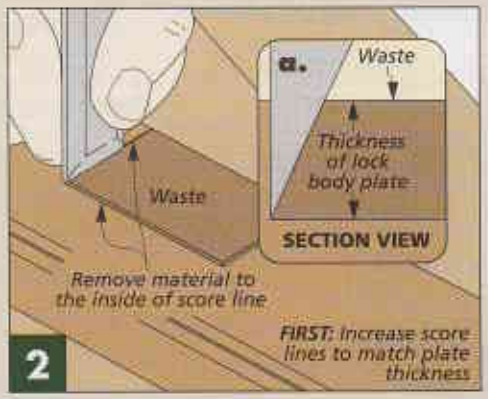
Precisely fit hardware is a hallmark of top-quality furniture. And most of the time, the hardware on a project is installed after assembly. But in the case of a half-mortise lock, you'll need to do things a little differently. The lock body is fit in a stepped notch before assembling the project. Then the strike plate can be fit after the lid has been attached.

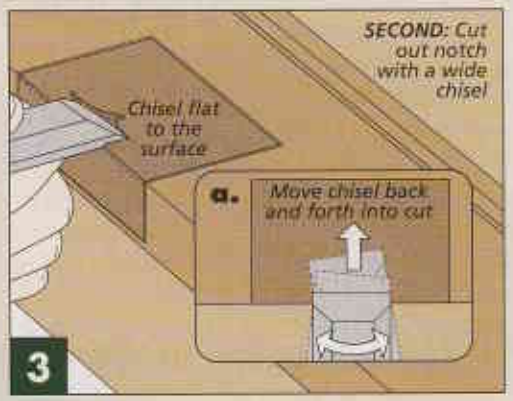
1 Chiseling the Lock Plate Notch

The lock is positioned so that the keyhole is centered on the front of the chest. To do this, I set the lock on the inside face of the front with the keyhole lining up on the centerline. Then, I scored its outline, as you can see in Fig. 1. I used a utility knife here because the score line left by the knife makes a handy place for the chisel to start cutting the notch. I used this same technique for laying out the top edge of the notch as well.

With the layout complete, the next step in the process is to chisel out the shallow notch for the lock plate. You can see how I did this in the lower drawings at left.

I began by increasing the depth of the score lines to match the thickness of the plate. The lines prevent you from making the notch too large. My tool of choice here is a wide chisel. It helps to keep the notch flat and smooth.



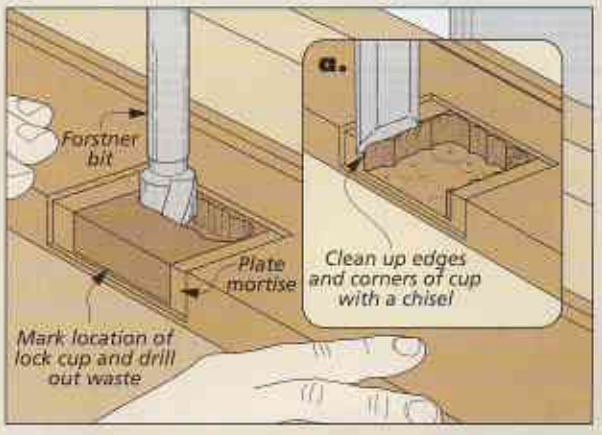


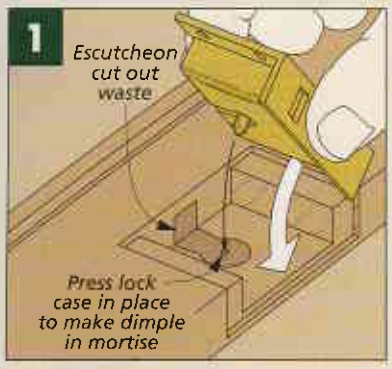
2 Drilling Out the Lock Cup

After the plate is fit into its notch, the next step is to make a second, deeper notch for the lock cup. While you could do this with a chisel, I take the piece to the drill press to do most of the work.

I like to drill out this notch a bit deeper than the lock cup. This way the lock will seat firmly in the plate mortise and not bottom out (drawing at right). For this step, I use a Forstner bit because I can drill overlapping, flat-bottomed holes. When drilling, you want to make sure that the bit doesn't break through the workpiece.

After drilling out most of the waste, clean up the sides and bottom of the notch with a chisel (detail 'a'). Be sure to leave plenty of material on either side of this notch for the screws to bite into.



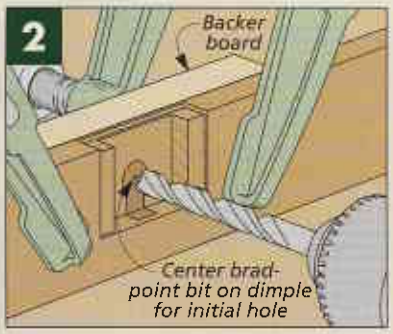


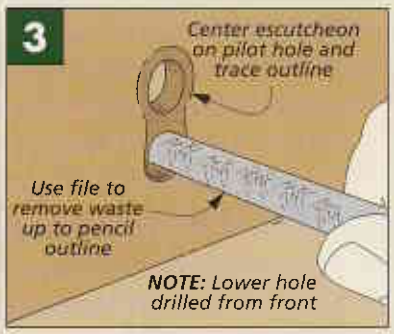
3 Fitting the Escutcheon

At this point, the lock should fit in its notch pretty well. The next step is to create an opening for the key and escutcheon. The escutcheon fits like a sleeve in a hole drilled in the case.

The lock I used made laying out this hole pretty straightforward. All you have to do is press the lock in place. A pin on the back of the lock makes a small dimple in the notch to locate the upper portion of the keyhole, as in Fig. 1.

With the keyhole position marked, you can now drill it out. I clamped a backer block to the front side of the workpiece to keep it from tearing out, as in Fig. 2. After drilling this hole, I centered the escutcheon over it and traced its outline on the chest. Then a second, lower hole is drilled from the front. It's not drilled all the way through so it won't be visible on the inside face. To complete the hole, I picked up a small, round file. I used it to connect the two holes and fine-tune the fit of the escutcheon, as shown in Fig. 3.



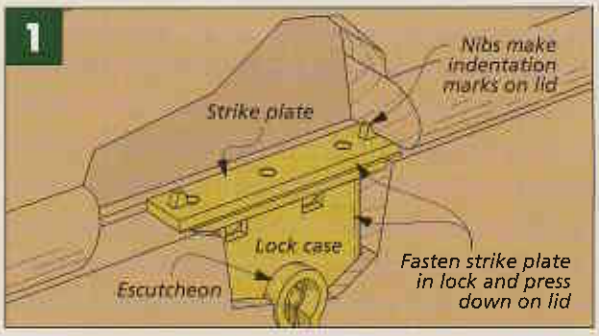


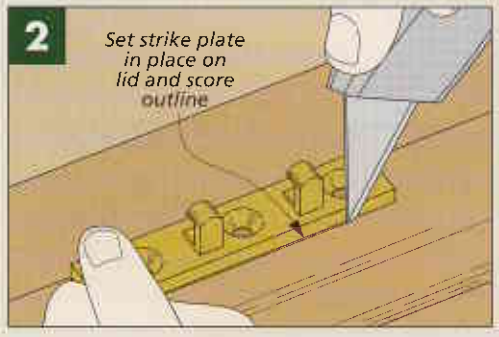
4 Installing the Lock Strike Plate

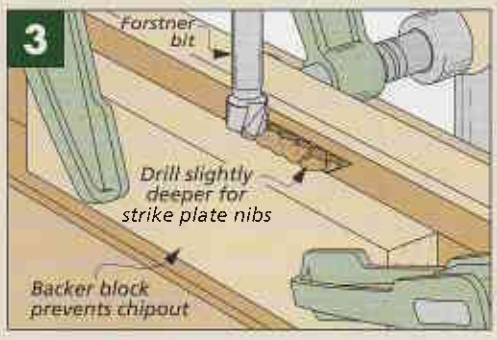
All that remains to be installed is the strike plate. This part of the lock is set into a shallow mortise in the lid. But to fit it accurately, you'll need to have the case assembled and the lid attached.

The first thing I do is to lock the plate in the lock, as shown in Fig. 1. Then close the lid on the lock. A pair of nibs on the plate will leave a set of dents in the lid that will help locate the plate on the lid.

Once this is taken care of, I removed the lid from the case for the actual cutting of the strike plate mortise. Like the lock body, I started by scoring around the strike plate on the lid with a utility knife (Fig. 2). With the layout complete, the next thing to do is drill out the mortise. I drilled the end holes a little deeper for the nibs to fit in, as illustrated in Fig. 3. Finally, you can clean up the edges of the mortise and square up the corners with a chisel. Be sure to test fit the plate often for a snug fit. W





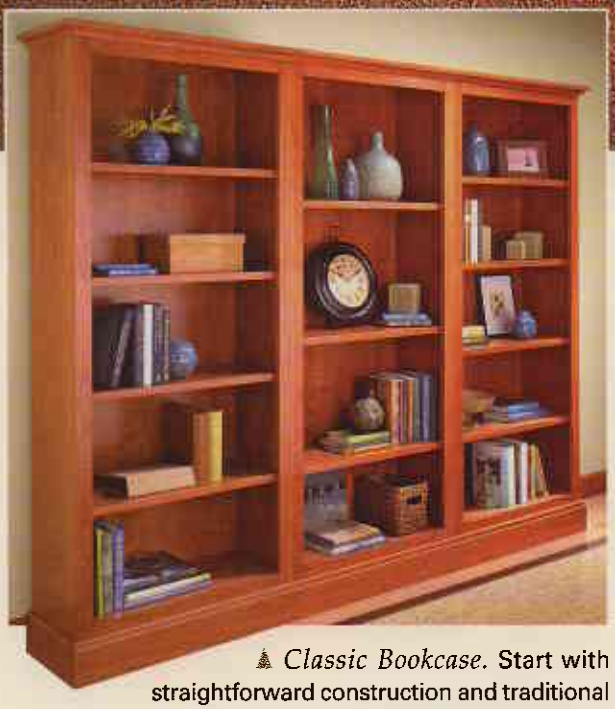


looking inside

Final Details

◀ *Patio Planter Boxes.* Strong joinery and durable materials are a must for outdoor projects. And these easy-to-build planters have all that as well as a great look. Detailed instructions begin on page 16.

▼ *Jewelry Chest.* This elegant chest packs a lot of detail into a small package. It features wrap-around drawer fronts, splined-miter joinery, custom-fit inserts, and a figured-veneer lid. Easy-to-follow plans begin on page 30.



▲ *Classic Bookcase.* Start with straightforward construction and traditional moldings. Then add an expandable design that makes it just as easy to build a single section or a whole wall of storage. Step-by-step plans start on page 22.